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This is a handbook of simplified techniques for determining manpower skill needs and training requirements and is for use by manpower advisors in developing countries. The handbook is in three sections which may be used separately or in conjunction with each other, depending upon the extent of statistical intelligence available in a given country. Included are methods for determining current skill needs and for introducing a continuing program of manpower reporting. Basic aspects of manpower reporting include an assessment of the different kinds of skills, the number of workers needed in each of the skills, and a time table indicating when qualified workers are available or are needed. The major parts of the handbook are Part I--Manpower Planning in Economic Planning, Part II -- The Area Manpower Skill Survey, Part III-- Occupational Guides, and Part IV-- Continuing Program of Manpower Reports. (CH)

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TECHNIQUES FOR DETERMINING MANPOWER SKILL NEEDS AND TRAINING REQUIREMENTS

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TECHNIQUES FOR DETERMINING MANPOWER SKILL NEEDS AND TRAINING REQUIREMENTS

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FOREWORD

Early in the process of planning for economic development in the new nations, consideration must be given to the programs and institutions required to produce the skills needed to man the increasingly complex machinery of economic development: Basic to this phase of planning, is an assessment of the different kinds of skills, the number of workers needed in each of the skills and a timetable indicating when qualified workers must be available.

At the outset, it is sufficient to have broad indications of total manpower needed or total jobs required to meet the goals proposed in the economic development plan for the country. As time goes on, however, more precise information must be obtained of the number of workers needed in each occupation so that educational and other training institutions may be geared to produce these numbers at the right time. Still later, a less extensive information gathering program must be introduced to show the progress being made in manpower development and utilization and to point out any weaknesses in program operations.

The Department of Labor was called upon by the Agency for International Development to compile, from its experience in the manpower field, a handbook of simplified techniques for use in developing countries by manpower advisors. Conceived as a single handbook, the completed instruction is in the form of three separate handbooks which may be used separately or in conjunction with each other depending upon the extent of statistical intelligence available in a given country. The titles are listed on the inside front cover of this manual.

This handbook includes methods for determining current skill needs and for introducing a continuing program of manpower reporting. It was prepared by Margaret Thal-Larsen, then with the California State Department of

Employment, under the direction of V. D. Chavrid, U. S. Employment Service, Bureau of Employment Security. The original draft was reviewed and constructive comments made by advisors who have conducted manpower assessment surveys abroad. Their suggestions are appreciated by the author as are the final review and preparation activities of John T. Murray, Allan E. Broehl and Linda Wright of the Division of International Manpower Assistance, Bureau of Employment Security.

As manpower studies are introduced in other countries in the future, manpower advisors will, no doubt, discover methods for improving the instructions in this handbook. Any suggestions they may have should be forwarded through appropriate channels so that they may be incorporated in future editions to make the handbook a better tool for future technicians.

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Techniques For Determining Manpower Skill Needs and Training Requirements

PART I

MANPOWER PLANNING IN ECONOMIC PLANNING

CHAPTER I

The Critical Need For Manpower Planning

Developing countries are alike in that they are nations in a hurry. Modern transportation and communication have shrunk the world, subjecting age-old institutions and traditional ways of life to the impact of modern industrial cultures. As a result, the peoples of developing countries have awakened to the variety of achievements possible in a mid-20th century economic society and they want these at once. They no longer believe that poverty is inevitable.

Leaders in these countries must attempt the rapid reformation of their societies if they would remain leaders. Theirs is the task of telescoping into decades all of the social and economic changes that took place over centuries in some of the more advanced countries of the world. To progress in this direction, they must act on the basis of facts and figures that could not have been dreamed of by leaders in countries that industrialized earlier and with less haste.

First among the changes developing countries are pressing to bring about is the improvement of technology. Rates of saving and capital formation must increase radically if this improvement is to come about. The Nation's manpower must be shaped into patterns that will maximize production under the new conditions of life. Outdated and restricting social, political, and legal institutions and customs must be adapted to the needs of an industrial society.

All of this must be done with the goal of increasing material well-being and of expanding consumption on a per capita basis. The nations that must undergo this rapid transformation are, for the most part, characterized by a population living largely in rural areas, a labor force mainly engaged in subsistence agriculture, and by generally low levels of education, health, available capital, and productivity.

Techniques For Determining Manpower Skill Needs and Training Requirements

Time plays a crucial role in modern economic development. In many instances the uneven application of modern technology in an ancient setting destroys traditional ways of life and produces temporary imbalances. The introduction of improved public health measures or the use of D. D. T., for example, can lower the death rate in a developing country in ten years by as much as it fell in fifty years in the early growth stage of the United States. Without equally spectacular progress in the production of goods and services, there will be no rise in the individual standard of living even though general production gains appreciably.

As another example of uneven progress, a few, newly-created, industrial jobs can lure job-applicants away from the security of the extended family to urban slums where they remain unemployed until industry expands sufficiently to give them work. Or a number of university students may receive training in highly inappropriate fields while industrial development falters for lack of manpower in the right kinds of high-level skills. Hence, in planning for modern economic development, careful attention must be focused upon the problem of developing the right kinds of manpower in the numbers needed to meet the time table of the development plan. Dislocations and imbalances such as those mentioned spell chaos if left unattended, and the rising expectations of the developing countries may not be satisfied quickly enough to ensure achieving economic development within a framework of free institutions.

Contemporary economic development differs markedly from the Industrial Revolution of the 19th century. In earlier economic and social transformations, technology was left to evolve according to a logic of its own. Private entrepreneurs risked their capital in instituting innovations and where successful, reaped handsome rewards. But history is not repeating itself in any major program of economic development today.

At the present time, the government in a developing country may play a much larger part in planning social and economic change in the attempt to direct its society towards predetermined higher levels. Such a role for government in economic development can be justified if it is based on sound knowledge indicating that the society has the inherent ability to achieve its projected goals. With this assumed, the rate of development can be judged to depend mainly on how rapidly society can be adapted to the new enviroment.

Temptation for the State to speed the transition is increased by the desire to break out of what has been called "the vicious circle of poverty." This circle which characterizes the developing countries at the outset of industrialization, exists because of an inability to save due to the low level of real income. The limited savings reflect a low productivity that cannot be raised without investment, yet investment is dependent on savings. How, even with planning, can this circle be broken? Agreement is far from complete as to the exact mechanics of economic development, but the initial push appears to stem from capital formation. This may be defined as diverting part of society's currently available resources to increasing its stock of capital goods in order to expand consumable output in the future and most particularly per capita consumption.

The need to plan, however, does not stop with the initial step of creating a surplus for investment. Beyond that lies the need for a continuing check on the distribution of output and the continuing guidance of production. Then, it is hoped an accumulating surplus will bring about a condition of balanced and self-sustaining growth.

An equally important condition is what might be termed a reconstituted labor force - a labor force which can meet the requirements of an industrializing society.

Capital will buy the physical requirements for an improved technology but only a modern, industrial labor force can man the factories and offices and produce the goods and services the new ways will demand if the new technology is to be effective in producing a higher standard of living. Economic planning, therefore, if it is to accomplish stated goals on time must also include manpower planning.

PART I

CHAPTER II

The Role of Manpower Planning

Manpower resources raise some of the most difficult problems connected with economic development and, generally, these problems may be organized into two broad categories. First are those difficulties arising from efforts to deflect the Nation's manpower from the traditional, social, political, and legal observances and the old work habits that stand in the way of evolving an industrial workforce. Second are the many problems coming from the necessity to recruit, shape, maintain and direct a diversified industrial labor force once the old customs are eliminated or at least adapted to meeting the needs of the new society.

No matter what the degree of development, the manpower supply-demand relationship in most nations is typified by shortages and surpluses far more consistently than by equilibruim within the labor market. Even in periods when approximate balance exists in the total relationship, there may be persistent and sometimes severe imbalance in certain occupational categories. A stable, developed economy can tolerate this lack of balance with less difficulty than can a developing economy. In the latter, both manpower shortages and surpluses present particular hazards since these countries cannot afford to permit waste of time and human resources nor do they have institutional arrangements that can lighten the hardships of workers temporarily unemployed.

It is uncommon to regard developing countries as lands of manpower shortage. The generally accepted view is that they have large numbers of persons available for any work that needs to be done. This popular misconception is dangerous to planning because of the hazards specific manpower shortages pose to the timely fulfillment of development goals in these countries where so much must be done in a relatively short time.

It is of little use, for example, to construct a steel mill if there has been no planning to provide the metallurgist whose training requires a longer time than is needed to build the largest mill. It is equally fruitless to plan for an improved level of public health without anticipating the need for training physicians, nurses, and medical technicians to staff the new program. Mechanization will call for machinists and machine operators and improved agricultural processes will require agronomists and farm machinery repairmen. Briefly, there can be no progress toward industrialization without the timely and appropriate development of those skills necessary to build and man the enterprises and institutions essential to such an economy. Most of all, attention must be given to providing for an adequate supply of "high-level" manpower, i.e., professional, technical, and managerial categories indispensable to social and economic development in any country.

Planning for these workers must be an integral part of the initial planning for economic development. Anticipating the numbers needed and arranging for their training must occur well in advance of the actual demand for their services. This is so because of the long lead-time required for the education and initial work experiences required to equip them to function effectively in the high-level capacity planned for them.

Furthermore, planning for these workers must be adequate. A sufficiently large need for them must be anticipated because the greatest proportionate increases in the future demand for workers will occur in the professional, technical, and managerial occupations. The increasing modernization of plant and process will generate a need for high-level personnel that increases disproportionately to the total of all manpower demand. Unless the skilled and high-level manpower becomes available in sufficient numbers when needed, development will falter, if not fail, bringing with it a threat to the survival of free institutions.

Contemporary economic development, as already suggested, is not proceeding into an uncharted future as did earlier industrial revolutions. Rather, it is specifically designed to attain rapidly the promise of high mass consumption, a goal which can be achieved only when manpower is properly utilized and appropriately coordinated with capital and natural resources.

Techniques For Determining Manpower Skill Needs and Training Requirements

Manpower planning presents the means to lessen or prevent blockages in economic development resulting from shortages of appropriate manpower and to forestall the dangers to social and political stability implicit in manpower surpluses. It is concerned at the outset with the development of high-level personnel as well as manpower resources at all skill levels.

For the longer term, it is concerned with preparing new generations of manpower. Such planning also seeks to further develop already-employed manpower through training within industry. It organizes appropriate agencies for manpower administration and development. It provides necessary information for testing the feasibility of economic plans in relation to the availability of labor and for such continuing action programs as the vocational guidance of students and the training of workers.

Manpower planning, if regarded from the viewpoint of its potential for preventing manpower surpluses, is concerned with determining those policies and programs that will lead to optimum utilization of the total manpower potential. Where the developing sector of the economy can absorb but a small portion of the country's available workforce, manpower planning must extend its concern beyond the immediate problems of the industrialized sector of the economy to include the problems of the preindustrial sector.

On occasion, this planning may be forced to consider the expedient of making the industrialization process more rather than less labor-intensive. Such planning may also indicate the need to use surplus labor in massive public works projects. Or, of necessity, there may be long periods when excess human resources must be persuaded to remain on the land and intensify their cultivation efforts or increase the productivity of their cottage and other industries based on local resources and traditional skills.

PART I

CHAPTER III

Information Required For Manpower Planning

No matter what its orientation, manpower planning requires a basic organization to develop appropriate information. In most advanced countries, national employment services play a large part in the collection of manpower information, partly because the collection of data is a natural by-product of employment service operations. In the United States, this type of data collection is highly developed; information collected by the United States Employment Service and Unemployment Insurance Service, together with survey information collected by the Bureau of Labor Statistics, constitute the bulk of the raw material that is processed to develop statistical data on manpower.

In developing countries, including those in which a functioning employment service exists, methods and organizations for collecting and evaluating manpower data are usually inadequate for developing the timely information needed for manpower program planning. In such countries, surveys appraising manpower demand and assessing manpower supply are needed early in the process of industrialization, and a continuing flow of manpower information is essential if industrialization is to proceed rapidly and successfully.

Because statistical and other informational sources are too limited in most developing countries to provide timely data for manpower program planning, these sources must be expanded. This cannot be done unless there is a strong initial appreciation for the information and a continuing interest in its improvement. If a manpower reporting program is delayed or not established because of the lack of an adequate statistical and technical apparatus to initiate and sustain it, such resources may never be developed.

Techniques For Determining Manpower Skill Needs and Training Requirements

To obtain data essential to the initiation of manpower programs consistent with the economic development plan, stop-gap measures are justified. These should be followed with a more complete and continuing labor market information program as time and resources become available.

There must be adequate information concerning the nature of the manpower needs of the economic development plan - their causes, their consequences, and the factors that could facilitate the solution of emerging problems as the institutions to meet the needs are under development.

Basically, what is needed is to bring together as much information as can be assembled concerning the labor market. Answers must be found for such questions as: What manpower is available? What is its age, skill level, and other relevant characteristics? Are any factors likely to alter its present composition: Migration to the towns, repatriation of foreign workers, increased employment of women? What are the manpower needs in various occupations and industries? How are these needs likely to change in the forseeable future because of technological changes and the requirements of economic development plans? What educational and vocational training facilities are available for creating the manpower skills shown to be needed, and how effective are these facilities? Is this training actually producing the required manpower to create a balanced industrial labor force with its high proportion of professional, technical, and managerial personnel, and wide range of skills and competencies needed for the economic plan?

In short, no matter how small and halting, a first step must be taken towards amassing the kinds of information needed for manpower planning, manpower development and manpower utilization.

Techniques For Determining Manpower Skill Needs and Training Requirements

The information obtained must be designed to meet the particular economic developments of the area it describes (whether an urban area, a region, or an entire nation). It must be organized in accordance with statistical and other facilities as they exist, and will generally include some or all of the following elements:

a. For long-range manpower planning

   1) Current and projected population, labor force, and employment by major personal characteristics usually projected from latest available census data.

   2) Forecast of future employment by industry and major occupational groupings.

b. For current action programs

   1) Distribution of employment by occupation - either for all occupations or for a relatively limited band of occupations particularly those which will require relatively long training time or those in industries most likely to be affected by economic development. This distribution will cover the current period and specific future periods.

   2) Expected occupational output of the educational and training institutions, including formal on-the-job-training programs in private industry and government, and education carried on in local schools and in foreign countries.

   3) Continuing information on current activities in the more important labor markets including economic changes, employment, occupational developments, labor turnover, labor supply and demand, hours worked, etc.

Techniques For Determining Manpower Skill Needs and Training Requirements

The information needed for manpower planning, and more specifically, for immediate action programs, may be determined in several ways. One would be to initially outline certain social goals of economic development based on desirable services to be provided in the future such as improved educational or health facilities. These are converted into manpower requirements by estimating the numbers of trained people required to provide these services. This method, however, has little applicability in the industrial sector. A second method is based on projected increased levels of Gross National Product for each or selected sectors of the economy. Estimates are then made of the additional workers needed in various occupations to produce this added output. Such estimates are based on the past experience of the economy with adjustments made for future changes in productivity. In order to successfully forecast the manpower requirements under this method, it is necessary that accurate GNP and employment figures exist to serve as the basis for making these projections.

The third method, the Area Manpower Survey, combines certain desirable aspects of the above methods but its basic information comes directly from employers, schools and training institutions and from government planners and administrators, a simplified data collection process with versatile geographic, industrial, and occupational coverage. These reports provide comprehensive estimates of current and future employment by occupation, industry and geographic area as well as an indication of the ability of schools and plant training programs to meet these needs.

The information developed by such a survey, together with the creation and training of a data collection organization that accompanies its successful operation, lays the foundation and provides the impetus for a continuing manpower reporting and labor market information program. If an employment service exists in a country where a survey is planned, employment service personnel may constitute the nucleus of any data collection organization that is instituted. If no employment service exists, the institution of a data collection organization may well create a climate favorable to the establishment of one. The training given interviewers and other survey technicians will be valuable either for strengthening an existing service or for creating a nucleus to staff a newly established one. This monograph covers area manpower surveys, continuing manpower reporting programs, and occupational guides. It is intended that it be used in conjunction with the other monographs in the manpower and labor market analysis series. At this writing two of these monographs are in preparation. These deal with (1) methods for determining current and projected population and demographic characteristics and (2) forecasting techniques for making labor force and employment projections by industry and occupation. These may be used concurrently with the survey monograph and subsequently during the period of development of labor market information on a continuing basis. The need for, value of, and timing of projections of population and demographic characteristics and of the labor force and employment structure will be determined by the conditions in the country.

The Area Manpower Survey should be followed as soon as possible by the institution of a continuing program of labor market information. Such a program, in itself, will guarantee the gradual evolution of the data sources and techniques needed to provide current manpower data for program planning and evaluation.

PART II

THE AREA MANPOWER SURVEY

CHAPTER I

Purpose and Summary

The primary purpose of an Area Manpower Survey is to assist and support a program of economic development by producing estimates of current and future manpower requirements in selected or in all occupations and by ascertaining the education and training needs to be satisfied if the manpower requirements of the labor market are to be met.

The results of such a survey will facilitate achievement of the following goals:

(1) Assist in economic development by translating objectives in the planned sector of the area's economy into manpower terms and by ascertaining the projected manpower needs of the market sector.

(2) Provide specific information on area manpower requirements leading to indicated changes in college and other school curricula; coordinated programs of management, technical, supervisory, and vocational training; training-within-industry and apprenticeship programs; and guidance and direction as to course selection for local students going abroad for study.

(3) Provide information pertaining to the area for use in vocational guidance and employment counseling which depends as much for its success on a sound knowledge of changing job opportunities in different occupations as it does on the perception of an individual's aptitudes and qualifications.

(4) Furnish tools to be used in job development and placement activities where a system of employment exchanges exists or is to be established.

(5) Provide specific information concerning the area's manpower resources as it may be needed in connection with the location, expansion, or relocation of industry.

(6) Develop specific information concerning the area's manpower surpluses and shortages as these may affect policies of in-migration, out-migration, or repatriation.

(7) Create a basis for planning and carrying out a continuing program of manpower studies in the area to provide information needed to measure the progress of economic development and to detect impediments to its success.

An area manpower survey is basically a method of determining the number of skilled workers available in a given geographic area and the number that must be trained or otherwise brought into the labor market to meet the demands of employers in the survey area at a certain time in the future (usually 2 and 5 years after the survey period). The two major sources from which raw data are collected are employers and training institutions. The method the survey technician uses to develop labor market and training data and project future needs for skilled workers and additional training facilities is very much like the method used to balance financial accounts. On the one side, for the projected period, are skilled workers already in the work force less those who will withdraw in the interim plus current trainees and potential trainees who will be trained within existing and planned facilities. On the other side are current vacancies and vacancies that will result from industrial development in the expanding economy, including the work force that will be needed to construct the facilities in which new or expanded industries will be housed. The imbalance between credit and debit represents new needs for skilled workers for which training facilities do not exist.

To develop these data and projections the survey technician operates his program in three phases: preparation, collection, and evaluation.

Techniques For Determining Manpower Skill Needs and Training Requirements

The first step in preparation is, of course, to sell the idea that a program is required to the officials empowered to assume or fix responsibility for its support and operation. Once responsibility is assigned, the survey technician proceeds to build a staff of assistants and employer interviewers, to study the labor market to be surveyed as thoroughly as possible from available sources, to study area maps to determine how to divide the area into units that can be covered most efficiently by his interviewers, to develop a training syllabus to train the interviewers, to develop lists of employers to be surveyed, to develop promotional material to sell the program to employers in order to obtain the cooperation necessary for a successful survey, to develop schedules with pre-lists of common occupations to be filled out by employers and schedules and inquiries to collect data from training institutions and from other sources, such as recent graduates.

When preparations are completed, the survey technician commences the collection phase. Letters are sent to employers to inform them about the survey and request their cooperation. Then the employers are sent a second letter and a schedule with a pre-list of the occupations common to the employers' industry group. The second letter usually contains a request for an interview at a particular time or asks the employer to indicate when an interview would be convenient. Interviewers call on employers at the time mutually agreed upon, assist them in completing the schedules, and make inquiries to get any additional information applicable to the survey's purpose. Schedules, inquiries, and, if necessary, interviewers are sent to training institutions and other sources of data related to the survey. Letters thanking each cooperating employer, institution official, and individual are sent out as the returns come in. Incoming data are edited and tabulated as received.

When all available information has been collected, it is broken down to determine the composition of the present labor market by age, sex, literacy rate, occupation, skill level, training status, and job vacancies. Evaluation of these data, together with data from training institutions and other sources and estimates of future needs, permit projections of future requirements for skilled workers and for training resources to produce them. Data collected, estimates, and projections are then summarized and written into a final report.

The form of the final report is determined by the audience for which it is intended. It should be written with the purpose of providing a foundation and gaining official and popular support for a continuing program of manpower information collection and evaluation to further the goals of the country's overall economic plan.

PART II

CHAPTER II

Organization and Staffing for Manpower Reporting

Area Manpower Surveys can be made by officials of the developing country itself, acting within the framework of its own manpower administration or by technicians responsible to an international organization, a technical assistance agency of another government, private foundations or universities. Regardless of who has responsibility for the conduct of the survey, advance planning must be made for the organization and staff which is to carry the survey to its successful conclusion.

With several alternative organizational and staffing patterns possible, this monograph limits its discussion to those functions and units of government that generally will be involved in a system of manpower planning and reporting rather than attempting to draw specific guidelines for a particular survey situation. Ideally a division of labor for manpower surveying would have a central statistical agency gathering basic economic data while an employment service conducts employer inquiries and provides information based on operating experience. These agencies, however, in a given developing country may not yet be functioning effectively. In addition, possible variants of the organizational setting preclude rigid rules as to choice of government agency to carry on the survey work.

Consequently, the following relate to concepts in general rather than to the conduct of any one particular survey or report.

The essential functions of an effective program of manpower resources planning and administration (which, in turn, must be closely coordinated with central economic planning) are the collection and analysis of statistical and other types of manpower information, the operation of a public employment service, and the administration of a central training authority. In time, the administration of various agencies concerned with the several aspects of employment and social security might be fitted, in whole or in part, into this structure.

Building the necessary administrative machinery to carry out these functions involves two steps. First, responsibility must be fixed within the government structure so that manpower plans can be framed that will support the program of economic development. Then, organizational units must be set up that possess sufficient authority to carry out their assigned responsibilities.

Information relating to manpower planning can come from a variety of sources. Some originates in census data or labor force sample surveys. Some arises out of establishment inquiries, reports from educational and training institutions, or special surveys among their graduates. Needed data can be produced by the operating experience of an employment service or by authorities responsible for economic development. Information can be obtained from private sources such as professional associations, and business and labor organizations.

Need exists, therefore, for a central agency which can coordinate information gathered upon a necessarily decentralized basis, assure the continuity of its collection and prepare this information for the operating agencies charged with furthering the objectives of an overall economic plan for their use in policy formulation and program planning. Experience suggests that this agency might well be a Central Manpower Resources Planning Office, operating as part of a Central Economic Planning Agency, or if there is no planning agency, as an independent agency at a high level of government.

Experience also suggests that there should be a Central Statistical Agency that will conduct various population and economic activity censuses, while a Public Employment Service and a Central Training Authority (probably both under a Ministry of Labor) will be, at once, both operating agencies and providers of information in their particular fields of responsibility. Various devices are possible to cement the cooperation of these several units and to channel their separate efforts towards joint contributions to common needs. Effective instruments promoting coordination can be "Technical Working Groups," comprised of representatives of the various agencies at the operating level; and also cabinet committees at the policy level of government.

Whether headed by a Manpower Resources and Planning Office, Ministry of Labor, or Employment Service, the government structure within which a technician preparing an Area Manpower Survey must work will probably be well established before his assumption of that task. His organizational responsibilities, or those of his superiors, will be to see that support from the highest levels of government is forthcoming for the survey; that lines of authority and responsibility leading upwards are as clear-cut as possible; and that the project itself, so far as it lies within the competence of the survey team to accomplish, is carried out with all the smoothness and effectiveness that can be achieved.

Whether or not a system of employment exchanges has already been established or its creation is imminent at the time an Area Manpower Survey is conducted will have a bearing on the staff selected for this task.

Organizing a survey and collecting data for its preparation affords invaluable insight into labor force structure, employment problems, techniques of industrial and occupational coding, and interviewing methods. An opportunity is provided for acquaintance with many of the employers, agencies, and organizations comprising the "public" of the new service. As these are all knowledges and skills that must be acquired by personnel in any system of employment exchanges, the training time expended for the survey can serve a dual purpose of training prospective employment service personnel.

Where a sufficient number of workers cannot be disengaged from their usual activities in a functioning system of employment exchanges to staff interviewing crews completely, the technician conducting the survey should nevertheless work with a host-country counterpart and, where possible, utilize employment service personnel sufficiently, at least, to supply middle-supervision for the project. In this way, the host country can accumulate experience of value to future employment service operations and to a continuing program of labor market reporting.

On the other hand, it is dubious that employment service personnel should be selected to gather data for or to organize a household survey of the labor force in those instances where this type of study and an Area Manpower Survey are conducted at the same time and under the same direction. Skills and knowledges required for the first type of study are not particularly applicable to employment service work.

Interviewing teams for surveys in developing countries have been recruited from among employment service personnel, university students and school teachers, and from workers made available by various government agencies.

Sometimes, considerably more interviewers have been trained than were needed in data-collection and then only the more promising trainees were employed for the survey. Those who showed particular promise were selected as intermediate supervisors, given specialist assignments in occupational coding or retained to gather data in outlying localities, where supervision was necessarily thinner, after all information had been gathered for the urban areas.

Preliminary to the actual sessions, it is advisable to prepare a complete syllabus for the use of trainees, covering the economic background of the nation and economic assumptions for the period of the survey, general concepts and methods and specific instructions for completing the schedules. Material may be given the trainees reflecting preliminary work on industrial and occupational coding; for example, translations into the local language of the United Nations, International Standard Industrial Classification of All Economic Activities and the ILO, International Standard Classification of Occupations (used to the third digit in this instance.)

A prominent local person should open each of the training courses with a talk emphasizing the importance of the survey results to the economic development of the country. In addition, the training sessions might be held at the local university or other suitable institution to further impress the trainees with the significance of the survey.

Because of the subtleties in many of the concepts and definitions used in the survey and the necessity of handling these skillfully during employer inquiries, if the data obtained are to be worth their cost, intensive training must be given the interviewers before they start to interview employers. Again, if the data gatherers are employment service personnel, this attention to their instruction will result in improved service when they return to the employment service operation.

One surveyor trained 175 employees of employment service field offices in order to obtain 100 adequately qualified interviewers for employer inquiries. These people were distributed for instructional purposes into several groups and each group was given an organized five-day supplemental training session.

On the first and second days of this instruction, general concepts and methods in employment and occupational information and manpower survey methods were covered by lectures and discussion. The third day was devoted to specific training for the manpower survey, including a "role-playing" demonstration in which one of the trainees acted as the employer and the other as the interviewer. On the fourth day, the interviewers went in pairs to establishments where they filled out the schedules according to the instructions they had received. On the last day, discussion was based primarily on their experiences during these practice interviews. This discussion not only served to sharpen interviewing techniques but, as its subject matter referred often to definitions, provided a means of testing their comprehension of the general material presented at the beginning of the course.

Staff training, however, no matter how thorough, does not exhaust the list of preliminaries to an Area Manpower Survey.

PART II

CHAPTER III

Other Preparations for an Area Manpower Survey

Among the more important tasks before launching a survey is creation of a favorable climate within the community for its preparation. Several devices can be used to help achieve this end.

Where a developing country possesses the means of communication making an approach of this type feasible, a press conference of such national figures as the Minister of Labor and the Minister of State for Planning can be held to inform the public of the need for the survey and the results expected from it. This can be followed by a talk over the national radio network by the head of the Manpower Directorate, and by press conferences in various cities in conjunction with the training of data-gatherers. Public meetings bringing together employer, labor, and government representatives in these cities are also advisable. Employer cooperation can be fostered by professional organizations and other associations of business executives and the assistance of these groups should be solicited.

Certainly where such elaborate publicity is not feasible, and possibly in addition to such publicity when it can be provided, letters explaining the purpose of the survey and signed by a high official of government should be sent to each respondent in advance of his receiving a schedule. This letter and the schedule itself should include a guarantee that there will be no disclosure of confidential information. As the fear that this will occur may be fairly general in some developing countries, this statement should pledge that no information obtained in the course of the survey will be used for either tax collection or law enforcement purposes.

Conducting a survey will have an impact not only on employers, unions, various private organizations and the general public, but also on related agencies of government with whom good public relations will be important. These relations can frequently be smoothed, and also much valuable assistance obtained, if the precaution is taken of setting up an advisory committee for the survey. One committee appointed in connection with manpower reporting in a developing country was under the chairmanship of the Undersecretary of the Ministry of the Interior and included representatives from the Ministries of Economic Affairs, Industry, Finance, the Departments of Vocational Education and Public Welfare, the National Economic Council, Central Statistical Agency, Board of Trade, and various provincial governments.

Other preliminaries to the actual collection of data will be of a bibliographical and facilitating character. One experienced survey technician warns that better insights can frequently be obtained regarding a country's actual economic problems and prospects from reports that have already been compiled, some of them possibly quite old, than from many of the opinions given in the contemporary setting. The U.N. Resident Representative in the country can often provide leads to studies already made. Also, if the study is to be of such dimensions as to warrant the use of data processing equipment, arrangements should be made well in advance either with the Central Statistical Agency or with a private contractor, if one is to be used, for the planning and scheduling of the necessary operations.

Due precautions must be taken in the designing of all schedules and forms to assure that they are generously pretested. It has been noted by technicians that many valuable suggestions as to schedule design can be obtained from local people when advance meetings with informed persons are held to discuss them. Attention must, of course, be paid to the matter of local languages. In some cases it may be necessary to reproduce survey materials in more than one language or to employ bilingual interviewers. Because terms like "labor", "manpower", etc. have misleading or unfortunate connotations when translated literally into some languages, special care should be exercised in the translation of these materials.

Along with the many problems arising during schedule design that must be resolved in line with the orientation of the survey, its content and various factors relating to local customs, practices, and language, will be the difficulty of obtaining a representative sample of respondents for the various inquiries to be undertaken.

It is probable that questioning of educational and training institutions will best be directed to the total inventory obtainable of such facilities.

It is probable, also, that a very rough selection of individual respondents will have to suffice for such special type inquiries as may be made of recent graduates or of persons trained abroad. The difficulty of obtaining comprehensive lists of such persons can be such that the technician will have to be satisfied if a large enough list can be obtained to support reasonable generalization. The construction of a randomly selected sample will most likely not be possible. In gathering this type of data, the technician is faced with the knotty problem of deciding whether the efforts to improve the data by special inquiries will show results significant enough to justify the money and staff time required. In the case of recent graduates and persons trained abroad, a fairly accurate general approximation may be obtained from professional societies and university and trade school placement bureaus with a reduction in cost and staff time that will outweigh the advantages of obtaining more detailed data.

Adequate coverage of employing establishments represents far and away the chief difficulty that will be encountered in the selection of respondents. If only the modern or a controlled sector of the economy is being surveyed, contacts will be limited to the larger (and probably listed) employers and the survey problems minimized. However, if obtaining a representative sample of all or most nonagricultural wage and salary employment is the goal, many difficulties should be anticipated.

Judging by the experience of past surveys, it is not likely that there will be available a comprehensive list of establishments in all size classes from such sources as a census enumeration, taxing authority, local government or licensing body or the listing which can be made available in some countries through the operation of a social or employment security system. It will probably be necessary to piece out the lists of larger employers by using all of these sources and any other available sources that can be found. It may also be necessary to have the interviewers search for the firms, block-by-block. Only in this way can sufficiently satisfactory lists be obtained to permit almost complete coverage of the larger firms and the construction of a sample of medium-sized establishments that approaches representativeness.

If small establishments must be surveyed, it appears that in the majority of developing countries, area sampling will be called for. In this case, reference to the Central Statistical Agency or the military may or may not produce maps or strip photographs made by aerial survey of the more thinly populated areas that could be helpful in plotting survey districts. Major population centers can be handled by preparing grid maps and selecting sample blocks with the help of local people who know the industrial composition of these areas.

And finally, consideration should be given to the manner in which the information gathered is to be presented in the completed report and, possibly, in other vehicles.

Area Manpower Surveys for developing countries have been prepared almost exclusively for presentation to government officials. Possibly in consequence, there has been little or no effort to make these studies in completed form attractive through the use of charts, graphs and various visual aids. It might be worth determining whether or not circumstances in a given country would warrant a more polished format or an abbreviated report for general public information. The existence of public interest in the survey, for example, might point to the need for a wider dissemination of the final product of these studies than has been customary. This would have an influence in providing a more receptive audience for a continuing program of labor market reporting and of press releases, if the climate of opinion in government circles were hospitable to this form of public education.

PART II

CHAPTER IV

Data Sources

The information needed for an Area Manpower Survey must be obtained primarily from employing establishments and from training institutions. These sources may be supplemented with information stemming from the economic development plan and from individuals particularly when information on the educational and training characteristics of the available labor supply is needed.

a. Employing Establishments

The data collected from employing establishments must reflect current manpower conditions in the plants and an indication of the impact on manpower of expected future changes in their operations. With variations to meet particular local circumstances, the basic data required from employers should include:

(1) The industry of the establishment: A statement describing the kind of business carried on in the establishment should be obtained to provide the basis for the assignment of an industry code.

(2) The occupational composition of current employment by sex and by broad-age intervals: The age ranges used should be tailored in accordance with the methodology to be employed in estimating wastage because of deaths and retirements. Also, it may not be necessary to present age data for men and women separately. It is likely that a distribution in four broad age ranges will be adequate for the survey purpose although greater detail may be needed at the lower end of the age scale because of the younger age of the working population in developing countries. It must be ascertained at the outset that all sects and areas of the nation under consideration use the same calendar.

(3) Employment requirements by occupation for future periods of time: Although forecast periods of "two years hence" and "five years hence" are common in Area Manpower Surveys, projections at these intervals may not be as useful in a particular survey as would other time periods. The shorter the projection, the more accurate it will be and, in no case, should it be extended more than five years into the future. Where an economic plan exists, the survey's manpower projections should definitely be keyed to the time span of the plan or with announced phases in its total time span.

(4) In-plant training programs and number of workers in training:

The degree to which employers are, themselves, supplying the need for trained workers will be indicated by the extent of in-plant training and apprenticeship programs.

(5) Minimum entry requirements: Information concerning minimum educational requirements for jobs at the entry level can assist in appraising the adequacy of the school plant for supplying future trained manpower needs, particularly in the high-level occupations.

(6) Other items: Where the need exists and the resources available for survey will permit, consideration should also be given to the collection of information on some or all of the following subjects:

(a) Job vacancies: Unfilled job openings constitute a barometer of current manpower shortages and, if they are sizeable, an indicator of blockages to future expansion where it is predicted.

(b) Literacy: Literacy information may be included both to indicate the problems facing employers in building up an industrial labor force and to assist government planning where programs to eradicate illiteracy are being weighed.

(c) Nationality: The number of foreign nationals employed can be the single most significant item to consider in estimating wastage when government policy envisages their speedy repatriation. The inclusion of this or like items, however, would depend on the circumstances of the specific survey.

(d) Turnover by occupation: Recent data if available.

(e) Current Factors Limiting Planned Expansion: Often there are reasons other than the non-availability of labor that are currently limiting planned expansion programs such as: (1) lack of suitable or sufficient raw materials, (2) non-availability of factory or office space or of construction facilities for building needed space, (3) insufficient community facilities such as transportation or communication services to permit expansion, (4) lack of capital at prevailing interest rates to support current expansion plans, and (5) import restrictions on needed capital or equipment and/or import restrictions on essential raw materials.

(7) Supplemental questionnaires: In addition to the schedules containing line item entries concerned with worker characteristics, employers may also be given one or more supplementary questionnaires requesting additional information, and their opinions on matters that may be considered relevant to a particular survey. The questions asked might relate to such matters as the following:

Training: In-plant and apprenticeship programs may be described. The employer's degree of satisfaction with the training given by local institutions or his suggestions concerning the type of training that should be given can be of value.

Labor shortages: The existence of chronic or large manpower shortages often provides insight into not only unsatisfied training needs but also defects in the organization of the labor market or deficiencies in community facilities. Any or all of these could become the subjects of action programs following a survey.

Manpower utilization: Information should be recorded concerning hours worked, if not on the schedule then through questioning. This information might be sufficient if obtained for the total force or it might appear desirable to obtain hours data by specific occupations.

In countries where custom or government regulations prohibit dismissing workers under certain circumstances, the number of these "surplus" workers should be ascertained. Where it might be useful to obtain this information by occupation, consideration should be given to adding the item to the schedule.

Miscellaneous information: Depending on the needs of the survey, employers might be asked information, were it relevant, concerning such topics as expected technological changes affecting their enterprises, expected market changes for their product, wage levels, employee benefits, recruitment methods, and trends in the employment of women or other identifiable groups in the population.

PART II

CHAPTER IV

Data Sources (Cont'd)

b. Training Institutions

In addition to information on current training and future training needs that can be gathered from employers, educational and training institutions must be queried in order to complete the training picture in the area.

The first step in this procedure is to build up a reasonably complete inventory of institutions to be contacted. Generally, the Ministry of Education will be able to furnish such a list, or a list of all institutions, at least, that have been licensed by the government. Vocational training centers of various types, however, may better be traced through the Ministry of Labor. Compiling a complete list of schools and centers under private auspices may offer real difficulties.

Depending upon the structure of the developing country's school system, information will be sought from junior, intermediate, and senior technical schools, commercial schools, and other vocational schools. The scope of the survey may suggest that the Ministry of Agriculture be approached to determine what agricultural training is given at various scholastic levels as well as, possibly, short courses for farmers under an extension service.

College level education and the professional schools of universities will be surveyed as well as vocational training centers some of which may have been developed with the aid of I. L. O. technical assistance or by private enterprises.

The information requested from these various institutions for greatest usefulness to the survey's purposes will probably center largely around the following topics, and be organized where feasible by occupation or occupational field:

Techniques For Determining Manpower Skill Needs and Training Requirements

1) Capacity of institution, expected number of graduates at end of current term and, if trend information is wanted, number of graduates for certain past periods.

2) Expected output by field of study as of succeeding school years so that these figures may be cumulated to the dates of the employment requirements projections.

3) It may be useful to ascertain, if reasonably objective information exists, concerning the post-graduation activities of former students that would indicate the extent to which skills learned in school are being utilized in the employment market.

4) If a survey of former students is planned in order to investigate the utilization of their training, schools could be requested for the names and last known addresses of a sample of their graduates.

5) If an effort is being made, difficult though it is to make this type of check, to examine and evaluate the quality of training being given, schools could be requested for the names and addresses of employers known to have hired their graduates to learn from these employers their opinions of the education obtained by the students.

6) Information concerning the number of students currently being trained abroad, the type of education they are receiving, and estimates of the expected output of foreign institutions may be particularly difficult to come by. However, some data of this kind might be obtainable from the Ministry of Education or from the Ministry of Foreign Affairs.

PART II

CHAPTER IV

Data Sources (Cont'd)

c. Individual Workers

The Area Manpower Survey proper may be accompanied with or followed by inquiries directed mainly to individual respondents. Not a part of the basic Area Manpower Survey, this avenue should be followed only where particular local problems exist which warrant the expenditure of time and effort in this direction. Where particularly detailed information is sought as to the type of training and education received by workers and the extent to which this has been utilized in their employment, it may be considered desirable to questionnaire a sample of workers and recent graduates. It may be that this procedure would be considered justified only in the case of workers who had prepared for high-level occupations. This justification may be because of such problems as an accumulating number of "educated unemployed" or the failure of students educated abroad to become assimilated in the local labor force to the best interests of the economy.

Individual respondents could be questioned so as to uncover the existence of the following problems, if they appear to be arising as they sometimes will in developing countries, or other difficulties that might be suspected:

1) Well-defined surpluses of graduates in the liberal arts, law, and languages may be accumulating concurrently with shortages in scientific and technical fields.

2) There may be a drift away from needed occupations for which students were trained, not because of difficulties in finding employment at the appropriate time and place, but because of a deliberate preference for higher status employment.

3) Utilization of professional personnel may be particularly poor because of a failure to understand properly the role of supporting workers who can be trained at less cost.

4) There may be evidence that trainees are receiving too lengthy or too specialized training for the tasks they later perform.

5) Graduates who are eminently well-qualified for teaching, most likely a field of serious manpower shortage, will not accept these posts because of comparatively low salaries or other substandard working conditions.

PART II

CHAPTER IV

Data Sources (Cont'd)

d. Basic Data From Related Surveys

When an Area Manpower Survey can be conducted in conjunction with a regular census enumeration or a special household survey of the labor force, it is obvious that the analysis of manpower supply included in the manpower survey will be considerably enriched.

A Central Bureau of Statistics would normally be the agency to conduct either a periodic census involving population enumeration or a special survey of labor force based on a sample of households. Were it possible to join forces between the agency making either of these studies and the one conducting a manpower survey (or in the event, as has happened, that the same technician was responsible for both) the data to be secured from individual respondents most helpful to the Area Manpower Survey would revolve about the questions on labor force status.

Although the problems encountered in population enumeration and labor force sample surveys cannot be detailed in this monograph, it should be pointed out that the difficulties of developing suitable concepts for measuring employment, unemployment, and underemployment in developing countries can also be relevant to the interpretation of data upon which an Area Manpower Survey is based. The clarity of thinking underlying the latter study would gain if for the country under consideration it had been established whether to use the "labor force" or the "gainful occupation" concept in determining labor force status, and how best the "intensity of employment" might be measured. Further, the Area Manpower Survey would always profit if certain overall magnitudes could be measured as would be the case when it was conducted during a census or labor force survey period. Consequently, if such a conjunction of studies can be arranged, it should be, and every effort to correlate findings from the two should be encouraged.

PART II

CHAPTER V

Scope of the Survey

a. Geographic Coverage

The geographic extent of an Area Manpower Survey may range from an entire nation or a broad region of the nation to a group of metropolitan areas or a single urban community. Several factors can influence the choice of area a survey will cover. These include the feasibility of data collection and the many limitations of staff, time, and money that will become evident as survey planning progresses. But also of fundamental importance are the general setting of economic problems and government policies within which the survey is to be planned and carried out.

In general, a survey made to expedite economic planning that is primarily oriented towards the rapid industrialization of the modern sector of the economy can be limited to an urban labor market area. This can be one or several urban areas depending on the nation's distribution of population, its geography, and its plans for economic development. These urban places can be surveyed concurrently or may be surveyed consecutively. The length of time intervening between studies of different areas may depend on survey resources or, possibly, on a desire to perfect techniques following one survey and before embarking on another.

A survey, on the other hand, designed in conjunction with economic planning which envisages a more balanced growth between urban and rural economies may need to include the entire territory of the nation, or at least as much of it as supports a significant amount of nonagricultural employment.

In either case, certain criteria should be observed in selecting the area to be covered in order to defend the thesis that a bona fide labor market is, in fact, under study.

Thus, an urban labor market, basically, is a specified geographic area where there is a concentration of economic activity and labor demand and where workers can generally change jobs without changing their residence. This will consist of a central community representing the center of labor demand and the surrounding territory where the workers live who are available for work in the community. The limits of the surrounding territory will be dependent upon the normal travel patterns of persons between their place of employment and where they live. As the urban area grows and the concentration of population in the surrounding territory increases, the boundaries of the labor market area will also expand.

The labor market is a flexible area expanding or contracting with economic and labor force activities. However, while these changes may take place over time, at any one time the labor market area must have rigidly defined boundaries. This is necessary so that estimates of labor demand can be matched with a corresponding labor supply and related figures of population estimates and economic activity may be compared to the manpower data. Where possible, the labor market boundaries should be the same as a minor civil division, group of associated minor civil divisions (or administrative units). This will permit easier identification of the labor market and will allow comparisons to be made with other types of data which may be available at the local level. For convenience of estimating, area boundary lines should be contiguous to the extent possible with the limits of a minor civil division (or divisions) or such administrative areas as do exist.

Where the nation as a whole is surveyed, the resulting analysis may revolve about a number of surveys, essentially of urban areas, presented concurrently and with relatively little attention paid the rural territory. In such a case, area distributions of data will be assembled, using the same criteria for each with respect to commuting radius as would be used in the definition of a single local labor market area.

Where data are presented for the nation as a whole without regard to the local labor market areas it contains, the assumption exists that the nation in its entirety constitutes a homogeneous labor market, that is, a person can move from one place of employment in the country without moving his place of residence. This can be the case where the land area is small; it can be true over time, though it might not be so in the short term; or it can be a valid assumption with respect to certain elements in the labor market situation or for the specific analytical purposes the survey is designed to serve. In certain circumstances, only a picture of the total national situation might be in point or have political appeal. Also, in most cases, the labor market for high-level personnel is national in scope even though it is not for other types of workers. Or it might be maintained that problems of labor shortage or labor surplus in one area of the nation would in due course have an impact upon another area because of the internal migration of workers. Related to this latter consideration is the fact that established patterns of worker migration across national boundaries cannot be overlooked in assessing manpower supply in some regions of the world.

PART II

CHAPTER V

Scope of Survey (Cont'd)

b. Industry Coverage

Both the difficulties of data-collection and the orientation of the survey will influence its industrial coverage. To achieve a reasonably comprehensive Area Manpower Survey, however, the list of industries included should be sufficiently broad to cover the majority of nonagricultural wage and salary workers in the area's labor force. These industries should encompass all significant sources of demand for workers in long-training-time occupations. Because of the extreme difficulty of obtaining reasonably complete lists of establishments in most developing countries it may be tempting to eliminate certain industries from coverage on that ground alone. If specific industries are to be omitted, these should be rejected only if they lack economic signifance and not because of survey difficulties.

Although agriculture is almost always excluded from coverage, a segment of farm employment may be included because such large and specialized operations as sugar or rubber plantations may have a significant impact on the labor market. Government employment assumes particular importance in the economies of many developing countries for often the modern sector, including many and diverse enterprises, is almost totally owned by the public authority. This fact, however, while it emphasizes the need for adequate coverage of government establishments does not necessarily spell an easier time of it for the technician than if these installations were in private hands. Centralization of payrolls and record keeping in government as elsewhere is not the rule in developing countries.

Certain sectors of self-employment, sometimes, cannot be disregarded if the survey is to provide adequate treatment of the need for high-level personnel. In some countries, complete coverage of physicians can be obtained through contacts with medical institutions and health services. In others it is necessary to work through professional associations to locate a sizeable proportion of physicians. The same can be true, also, of such workers as architects and engineering consultants.

Closely allied to the problem of selecting those industries to be covered in a survey is the choice of an industrial classification system. In the great majority of surveys completed to date, the United Nations International Standard Industrial Classification of All Economic Activities has been used. Not only has this system appeared most satisfactory for the immediate purpose but also its use facilitates international comparisons of the data obtained.

PART II

CHAPTER V

Scope of Survey (Cont'd)

c. Occupational Coverage

The primary purpose of the field survey is to obtain employment counts for at least those occupations which will play significant roles in the economic development of the country. Great care must be exercised in the selection of these occupations to be certain that all appropriate occupations are included and that the survey is not burdened with an excess number of relatively unimportant occupations. It follows that the completed study will have failed its goal to the extent that detailed data have not been reported for the so-called high-level occupations, if not for all "long-training-time occupations."

As in the case of the survey's industrial coverage, the orientation of the study and the difficulties of data collection will be weighty factors as to the choice of major occupational groups to be explored in detail through the break-out of employment in individual occupations.

A decision that all occupations requiring a minimum of two years formal training are to be reported individually will provide a fine enough net to hold all high-level personnel plus most skilled and many clerical occupations. It may be, however, that the survey is oriented towards the view that the developing country's really urgent need is to generate and accumulate what has been called the "critical minimum quantity of high level human resources and find the means of directing them into productive channels." If the survey is designed primarily to facilitate achievement of this goal, it is likely that the entire emphasis of the study, insofar as the gathering of specific data is concerned, will be restricted to managerial, administrative, professional, technical, and related occupations.

Possibly though, a broader view than the foregoing will prevail as to the gamut of occupations to be reported in detail. A shortage of qualified foremen, skilled craftsmen or clerks may be the bottleneck impeding a developing country's economic progress. If this is the case, the scope of the survey will have to be enlarged accordingly.

Experience preparing Area Manpower Surveys in developing countries indicates that the identification of jobs and skill levels is as difficult, if not more difficult, than obtaining reasonably inclusive lists of employing establishments. The former task presents the greater problem in the training given survey crews. For this reason, several experienced technicians have recommended that every effort be made to narrow the band of occupations to be specifically identified to the maximum extent possible within the limitations of producing a useful survey.

Many developing countries possess no system of occupational classification that has been formalized. While it can be granted that such a system will be developed in time (probably by identifying jobs as they exist locally with the I. L. O. International Standard Classification of Occupations, or converting such a local system as may exist to this classification and then issuing the resulting material in the local language) it is seldom that an initial, much-needed survey can wait for the completion of such a project. An adaptation will generally have to be resorted to such as translating parts of the I. S. C. O. into the local language. Here too, care must be taken to avoid the pitfall of literal translations. The fewer the individual occupations to be identified, the easier will be the burden of developing this transitional occupational material previous to the survey.

Also, as soon as the occupational coverage includes the identification of skilled craftsmen, the problem arises of determining skill levels in some feasible manner and in a fashion that will be meaningful in the light of local standards and practices. There have been various approaches to the solution to this problem. Occasionally, it has been possible to devote considerable time to the actual observation of performance on a large number of jobs. Or well-trained interviewers have gathered a substantial amount of supplementary material from employers for the later classification of the jobs by specialists. In other instances, employers have, themselves, been given the task of classifying industrial workers into categories of foremen, leadmen, skilled, semiskilled and unskilled, "after full understanding of the definitions required for each category." This method begs both the question of the suitability of the definitions for local practice and the degree to which the employer understands them.

The technician's task of devising some ready and probably rough criterion for distinguishing a "skilled" worker can be eased by historical accident. One developing country, at least, retained a system of progressively more difficult trade tests, and passing a given level of test in the series could be judged proof of skill. More often, however, local customs will not be so fortunate for the technician and his problems. More likely the best if not the only criterion open to him will be the arbitrary rule that workers who have received formal training in the occupation are to be considered skilled. Wage levels, of course, may be taken into account where this appears sound procedure.

The I. L. O. occupational classification structure should be used both in the collection and presentation of data where a local classification has not been developed. The I. L. O. classification is not only best suited for use in developing countries at the present time because of its comparative simplicity, but it is also being adapted in some of its sections to the needs of certain less industrialized parts of the world. Also, its use facilitates international comparisons of the data. One experienced worker in the survey field has cautioned that whatever the occupational classification system used, data should not be collected in finer detail or, particularly, interpreted more finely than is relevant to local practice. If, for example, a developing country's need at the moment is, and for many more years will be, for workers "with social worker training", there is little point in carefully distinguishing several specialties in the field which have not as yet been rigidly differentiated in contemporary local custom.

Two approaches are possible to achieve reporting the requested information by specific occupation. One method is to set up, in advance of the survey, a list of those occupations to be reported individually. The excluded or unlisted jobs would then form one single residuum accounting for the balance of the establishment's workforce. Or this remainder, if circumstances warranted the additional effort could be organized into a number of residual categories under the appropriate major occupational groups.

Where prelisting is used, it is advisable to prepare establishment schedules in such a way that only those selected occupations likely to be found in the industry being surveyed will be identified on the schedule. Otherwise, the latter will become inordinately long. The selection of certain occupations for prelisting should rest on such criteria as the fact that the job is characterized to an especial degree by a shortage or surplus of manpower, can be expected to show relatively great labor market activity in the future, or represents a particular training problem.

A second approach to obtaining information by specific occupation is to instruct that each job encountered in a given major occupational group in a surveyed establishment is to be identified by the employer and to appear as a separate line item entry on the appropriate schedule. Jobs outside of the major occupational groups distributed by individual occupations could, as in the first method, be treated as a single residuum or organized as a residuum for each major occupational group.

Prelisting would generally appear a more certain method of obtaining homogeneous data than would be the employer's own efforts at distributing his staff by individual occupations, even when the help of a skilled interviewer was given him while the survey schedule was being completed. However, this listing could also be quite cumbersome if really comprehensive. One solution can be a compromise between the two methods, prelisting the most important individual jobs in a given major occupational group and leaving it to the employer to account for his remaining occupations or the "open end" in that group by, himself, specifying the individual jobs comprising the remainder in his particular establishment.

PART II

CHAPTER VI

Collection and Processing of Data

Considering the enormous variations possible in the social, political, and economic situations characterizing the nations in which Area Manpower Surveys may be made, it must be admitted at the outset that, at least in their details, about as many methodologies will have to be developed in order to collect and process the data as there will be surveys conducted.

The variations in the scope of Area Manpower Surveys--as to area, industries, and occupations covered, and with respect to their place within an administrative context and, thus, the authority with which the surveys may speak--will exert a strong influence upon both data gathering and data processing. For example, where the geographic scope of a survey is small and the covered industries few, and a limited number of large establishments account for all or most of the surveyed employment, tabulating employer data will be relatively simple. But where a larger volume of information must be collected because some industry groups include large numbers of small establishments, sampling procedures will have to be used.

Under most circumstances, however, preparing an Area Manpower Survey will involve certain major steps that are summarized below. And in most instances collecting and processing field data for a survey will require an assemblage of schedules, work sheets, line-item instructions, and estimating procedure that will represent various adaptations of the proposed materials and procedures which follow this summary.

Employer cooperation in providing complete and accurate information is vital to the success of the survey. To encourage this type of cooperation the surveyor might adopt the following measures:

a) Develop a form letter to be sent to each employer and signed by a high government official, explaining the purpose of the survey, requesting the employer's cooperation, and pledging confidential nature of returns.

b) Prepare a follow-up letter for employers who refuse to arrange for an interview or delay transmittal of completed forms.

c) Send a letter to each cooperating employer thanking him for his cooperation.

In general, processing data for an Area Manpower Survey will involve the following sequence:

Information will be collected from employers usually through personal interviews and recorded on an employer inquiry schedule. The information relating to current and required employment will be posted to the appropriate industry tabulations under size-class of establishment. Sample totals should be expanded by the appropriate sampling multiplier. In some cases, industry adjustment factors may be used to obtain estimated total employment, current and required.

In developing nations, the survey technician may rely less on establishment schedules and more on outside sources of information such as an economic development plan if one exist in order to arrive at projected levels of employment.

All returns relating to the controlled sector of the economy will require careful editing prior to tabulation to guarantee that forecast employment is in accord with the economic plan. Planning officials will have to be contacted also concerning new industries expected to be established during the forecast period. Where new industries will be introduced during the period covered by the survey, construction labor needs must be approximated if the facility is to be built by labor available in the country. The facility's operating labor needs must also be estimated. The volume and occupational composition of this workforce may already have been estimated by the central planning authority or by a manpower resources planning agency. If not, the survey technician will have to supply an estimate.

Detailed occupational tabulations are also prepared in order to arrive at totals for whatever "stub" items have been collected on the employer inquiries. These will probably include distribution by occupations of current employment by sex and age distribution; of required employment as of the forecast dates, of trainee output as of the forecast dates, and of job vacancies. Also included may be such items as "surplus workers," foreign nationals, and literacy. Sampling procedures and adjustment factors derived from the industry tabulations will be used, as appropriate, to expand occupational data to estimated totals.

In estimating future manpower requirements, replacement as well as expansion needs must be taken into account. 1/ Special methods related to policy or other considerations may be indicated in estimating replacements, or more sophisicated methods may be used such as the application of labor force separation rates expected within selected age groups to the workforce in the various occupations as reported by age and by sex. Whatever the method of estimation, replacement needs added to projected expansion shown in the employer inquiries, (as edited in accordance with economic plan sources) and labor needs of expected new establishments will represent the total of required employment by industry and by occupation for the forecast periods.

1/ See page 90 for explanation of factors effecting replacement needs.

Matched against these estimates of required employment will be estimates of the output of trained manpower supply. Information as to one segment of this supply will have been collected on the employer inquiry schedules, namely, the number of in-plant trainees expected to have completed their training within the forecast periods. Depending upon the occupations involved, estimates of the number of entrants from sources other than in-plant training programs will have to be derived from the schedules collected from local school authorities, vocational and technical schools, and colleges and universities. Information may also be available as to expected immigration of trained foreign nationals or local students graduating from foreign educational institutions.

Depending upon the plan of the survey, data may have been collected also from individual respondents with respect to the utilization of their training in the current labor market. If so, these data as well as "comment" questions appearing on establishment schedules (possibly concerned with the type of training employers want to see provided) and "comment" questions on training institution schedules (possibly concerned with limitation of facilities and staff that might hinder expansion of training programs) will need to be processed and interpreted.

If the survey had been made in conjunction with a sample household enumeration of labor force, or if a demographic study has preceded the survey, these other sources should be inspected for whatever information they can provide for a more exhaustive treatment of manpower supply or of other economic characteristics of the geographic area included in the survey.

When all statistical data are tabulated and analyzed and the qualitative information processed, the survey report must be written and, if it is appropriate to do so, attention must be given to the various ways whereby the policy recommendations the report may contain can be best presented and followed through.

Techniques For Determining Manpower Skill Needs and Training Requirements

Following is a series of sections detailing various procedures or containing proposed schedules and tabular materials that will provide at least a point of departure from which the technician can proceed to make the necessary adaptations and improvisations called for by the particular circumstances under which he is conducting a survey.

PART II

CHAPTER VI

Collection and Processing of Data (Cont'd)

a. Employer Data

1. Employer Inquiry Form

The Confidential Employer Inquiry on Manpower and Training illustrated below is designed to serve only as a guide in developing forms appropriate to the conditions and practices in the country where the survey is being conducted or to the orientation of the particular study. The flexibility of emphasis possible in an Area Manpower Survey has already been discussed, particularly in connection with its industry and occupational scope. Thus, the form shown may or may not meet the precise requirements of a particular survey. The age distribution shown in the proposed schedule, for example, will not necessarily be the most useful in all cases or the collection of age data for the sexes separately may furnish information in greater detail than is necessary for a particular survey.

In any case, there are basic items which should be included in any survey. These include occupational distributions of current employment (with its age composition) excluding trainees, estimated employment requirements, and the number of persons expected to complete training.

Following the proposed employer inquiry schedule are line item instructions for completing the entries it shows. The instructions may be printed on the reverse of the schedule or they may be included in a separate sheet.

2

Techniques For Determining Manpower Skill Needs and Training Requirements

Confidential Employer Inquiry

(Please Read Instructions Carefully Before Entering Information)

Manpower Survey of ______________
(area)

a.
Company Name
Address

Person Providing Information
Scheduled Work Hours Per Week ________
Codes Ind.________ Location________ Empl.________ Sample________

Date Schedule Completed________________________

b.
Factors Other Than Manpower Which Are Limiting Planned Expansion________________
____
____
____

c.
Kind of Business Operated: CODE: ________
____
____
____

OCCUPATIONS	TOTAL NUMBERS OF WORKERS	CURRENT TRAINEES	Qualified Workers Currently Employed (Exclude Trainees)										Unfilled Jobs	Necessary Skill Ability to:			Minimum Entry Requirements	Estimated Employment Requirements		No. of Workers Expected to Complete Training	
			Male					Female													
			TOTAL	Under 15	15-29	30-44	45 and over	TOTAL	Under 15	15-29	30-44	45 and over		Read	Write	Do Simple Arithmetic		in 2 years	in 5 years	in 2 years	in 5 years
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)

1. Establishment Total

(Prelist of occupations to be surveyed, may be open end if considered desirable).

Instructions for completing proposed Confidential Employer Inquiry on Manpower and Training

Please read these instructions carefully prior to entering your information on the inquiry schedule.

a. Identification

Company Name: Give name under which the business is generally known.

Address: Give the street address and town or city at which the business is located.

Person Providing Information: Give name and title of the official who has been assigned responsibility for submitting the data requested on the form.

Scheduled hours of work per week: Enter the scheduled number of hours worked by the majority of workers in your establishment during the survey week.

Codes: When the employers to be surveyed are taken from a previously developed list of employers in the area (especially when sample techniques are used), indicate in these spaces the industry and location codes (if any) and the employment of the firm at the time the sample was drawn. The sample code will identify the stratum from which the establishment was drawn and will remain unchanged through the data processing. These codes, together with the establishment's name and address, should be filled in by survey officials prior to the time the Inquiry Schedule is given to the employer.

b. Factors Limiting Planned Expansion: List here any reasons other than the unavailability of labor that are currently limiting expansion plans in your establishment. These may be but are not limited to:

(1) lack of suitable or sufficient raw materials.

(2) lack of needed space to expand and/or lack of construction materials and equipment to build additional space.

(3) lack of needed community facilities (i. e. transportation, water, power or communication services).

(4) lack of available capital at reasonable interest rates.

(5) import restrictions on needed equipment and/or raw materials.

c. Kind of Business Operated: Enter here a brief description of the kind of business you operate at this location. If the establishment is engaged in trade, indicate the product lines sold; if manufacturing, list the products produced and the percent each contributes to the total value of all products produced in the past year.

Column (o) -- Occupations: Occupations listed in this column are of major importance to the economy of this area and require relatively long periods of prior training to acquire necessary skills. The listing may not include all occupations used in your establishment or all that you plan to use in the future. Where this is the case, post the appropriate column entries for the total number of workers in unlisted occupations opposite the line item, "All Other" under the appropriate major Occupational Group. 1/

1/ These instructions and others related to distribution by occupation must be appropriately modified when an "open-end" list of occupations is used.

Techniques For Determining Manpower Skill Needs and Training Requirements

Some of the occupations in your establishment may be included in the list under a title different from that used in your plant. Please study the list, and the attached pamphlet of job definitions carefully before making any entries.

Column (1) -- Total Number of Workers: The establishment total and total employees in each occupation to be reported in Column (1) represents all employees including trainees in this establishment for the reporting week. Trainees for each occupation should be reported in the total for that occupation. Each line item in Column (1) should be the sum of the same line items for Columns (2), (3), and (7).

Where employees who are retired or on leave for extended periods of time appear on the payroll, they should be substracted from the total payroll before entering this figure in Column (1).

Column (2) -- Current Trainees: Enter in this column the number of persons you have in an organized training program for each of the occupations listed.

Column 3 - 12 -- Qualified Workers Currently Employed (Exclude trainees): Enter in the appropriate column the number of fully qualified workers (excluding trainees) who were employed in each of the separate occupations listed in Column (o) and the workers in other occupations in "All Other" for the appropriate occupational group. Enter "none" in Column (1) where you have no employees in the listed occupations or in the "All Other" category of the major occupational groups.

Note: The entry in Column 1 for each listed occupation or for "All Other" should be the sum of the entries in Columns 2, 3, and 8. The entry in Column 3 should be the sum of the entries in Column 4 through 7. The entry in Column 8 should be the sum of the entries in Columns 9 through 12. Persons receiving in-plant training should not be included in the counts for Columns 3 through 12 but should be included in Columns 1 and 2.

Column 13 -- Unfilled Jobs: Enter in this column the number of unfilled jobs you now have in each of the listed occupation or in the "All Other" category of the appropriate major occupational group.

Columns 14-16 -- Necessary Skills: Opposite each listed occupation and for each "All Other" category, give in column 14 the number of jobs where the worker holding that job must possess the ability to read. If all such jobs in the classification require this ability, the total in column 14 will be equal to that of column 1.

Opposite each listed occupation and for each "All Other" category, give in column 15 the number of jobs where the worker holding that job must possess the ability to write. If all such jobs in the classification require this ability, the total in column 15 will be equal to that of column 1.

Opposite each listed occupation and for each "All Other" category, give in column 16 the number of jobs where the worker holding that job must possess the ability to do simple arithmetic. If all such jobs in the classification require this ability, the total in column 16 will be equal to that of column 1.

Column 17 -- Minimum Entry Requirements: Opposite each listed occupation, post the following code letter that characterizes the minimum schooling or training you require of a majority of the workers in the selected occupation. Enter one code only.

Code	Required Minimum Schooling or Training
a.	None
b.	Apprenticeship
c.	Trade School
d. (enter also the length of time of previous experience required)	Previous-on-the-job experience

e. Business School
f. Some Elementary School
g. Completion of Elementary School
h. Some Secondary School
i. Completion of Secondary School
j. Some College
k. Graduation from College
l. Graduate Degree
m. Other (specify under comments)

Columns 18 and 19 -- Estimated Employment Requirements in two and five years: For each listed occupation and for each "All Other" category, enter in the appropriate column your best estimate of the total number of workers you will require two years and five years from now. These estimates should represent the number of trained workers required to be on the payroll at the designated times in order to meet the production you now plan for those periods, or the production indicated for you by national plan objectives when your output is so controlled. Assume that adequate manpower and materials will be available. Take into account planned expansion or contraction of existing plant and equipment, changes in hours of work and work shifts, changes in productivity of labor, changes of technology or process, and changes in the market for your operations or product. Your estimates should not include workers needed as replacements of prospective losses due to normal turnover (hiring and firing) or trainees who may then be employed by you but the estimate should include losses expected from death and retirement.

Columns 20 and 21 -- Number of Workers Expected to Complete Training in two and five years: For each listed occupation and for each "All Other" category, enter in the appropriate column the number of workers expected to complete your organized training program in the next two and five years. If you have no in-service training program, enter 0 in each of these columns.

Comments: Space is provided at the end of this questionnaire under "Comments" for any opinions you might wish to express concerning your current experience in recruiting qualified workers for your establishment, training programs now given or that you would like to see given by local schools, or any other matters you might care to discuss with respect to the manpower demand-supply situation.

PART II

CHAPTER VI

Collection and Processing of Data (Cont'd)

a. Employer Data (Cont'd)

2. Sample Selection

There will be instances in which the geographic and industrial scope of the Area Manpower Survey is so narrow that employer inquiries will be directed only to a comparatively small number of known establishments. This will be true in relatively small areas where interest if focussed on the needs for trained manpower generated by the modern sector of the economy.

There will be other cases where a broader coverage is decided upon where reasonably adequate lists of employers of ten or more workers exist and all such employers are questionnaired.

However, more typical situations will be those where too broad a coverage of employers has been decided upon to permit 100 percent coverage. In those cases, sampling will be required.

If a reasonably complete list of establishments can be obtained (from census, taxing authority, ministry of labor, local government, licensing body, or some other agency) together with the approximate employment of the listed establishments, the sample can be selected from this list.

The most efficient sample that will provide valid results for a manpower survey is one stratified by establishment size within industry which includes all large establishments and a lesser representation of the smaller establishments in the industry. Large establishments may be defined to include those which, in total, employ approximately 50 percent of the total employment in the industry. If to obtain 50 percent of the employment in an industry it is necessary to include an excessive number of firms employing fewer than 100 workers, it may be desirable to define "large establishments" as firms employing 100 or more workers. In sampling the remaining establishments, a greater proportion should be sampled from among those employing larger numbers of workers and a smaller proportion from those employing fewer workers. Under certain circumstances it may be entirely warranted in developing countries to exclude from coverage, at least in most industries, all employers of fewer than ten workers.

If the approximate current employment of firms appearing on the list is known, these firms should be listed by industry and, within each industry, by descending order of employment size.

Approximate employment, then, should be totaled for each size class within industry, giving totals for each predetermined size class, for example:

(1) Under 20 workers

(2) 20-99 workers

(3) 100 and more workers

For the purposes of an Area Manpower Survey an adequate sample in such a case as the above could be achieved by surveying all establishments of 100 and more workers plus a randomly selected sample of the smaller firms. The group, 20-99, arrayed according to approximate size, could be sampled by starting with a random number less than five and selecting every 5th establishment in the listing. The group, under 20, arrayed according to approximate size, could be sampled by starting with a random number less than 25, and selecting every 25th establishment in the listing.

Caution: Each establishment should be identified by the code of the strata from which it was selected. Regardless of the employment size (whether higher or lower) reported on the completed schedule, data for the establishment should be processed in the strata from which it was originally selected.

Variations in this procedure will be required depending upon the assumed completeness of the available list of establishments. An assumption likely to be borne out in fact is that the list of large establishments (either those of 50 and over or those of 100 and over) will be fairly complete. However, the list of establishments employing fewer than 50 workers or fewer than 100 workers will be far from complete and there will be little knowledge previous to the actual employer inquiries as to the total employment represented by the smaller establishments or of the individual employment of those actually listed.

In such cases the group of large employers should, nonetheless, receive 100 percent coverage. If the list of smaller employers, however, is so incomplete as to indicate that even with a 25 or 30 percent sample of this group, so large a sampling error will be introduced into the total as to make the entire survey findings invalid, area sampling procedures will need to be followed.

In area sampling of employing establishments the entire area in which the firms to be sampled are located should be subdivided into smaller areas or districts. The boundaries of the districts could be arrived at arbitrarily from an aerial photo or map with these boundaries conforming to certain man made or natural features. More probably, the districts would be laid out on a basis of information and judgement to correspond with those sections of the area that industrially were comparatively homogeneous. Such districting will allow those portions of the area that are less important to the subject of the survey to be sampled at a lower sampling rate than those with a higher density of employment.

The districts are then divided into sample segments, each containing as nearly equal a number of establishments as possible. All segments in a district are numbered consecutively from a central segment and continuing in a spiral or serpentine fashion throughout the district.

Within the sample segments either a random or a systematic sample can be drawn. Every establishment in "n" number of randomly selected segments in the district can be sampled or every nth numbered small establishment in the selected segments plus all large establishments in the entire district. Stratification by industry as well as size can also be introduced.

The size of the sample to be selected will depend on the total employment of the area, the survey resources available, and the degree of detail sought in the findings. For a study such as the Area Manpower Survey, it is unlikely that anything less than a 100 percent sample of all large establishments and a 20 percent sample of the smaller firms will be satisfactory. Developing adequate procedures to locate this sample will require the assistance of persons who are well acquainted with the industrial characteristics of the area, of persons who are familiar with methods of statistical sampling, and, preferably, the availability of detailed maps and directories. Where the sample selection is made on an employment-size stratification basis, each of the selected firms should be identified on the inquiry form as to the strata from which it was selected. The firm should be continued in this strata throughout the processing steps without regard to the employment-size reported on the completed employer inquiry form.

PART II

CHAPTER VI

Collection and Processing of Data (Cont'd)

a. Employer Data (Cont'd)

3. Processing Employer Data

All employers selected for the survey, whether on a sample or universe basis, should be listed as a control to ensure the return of a schedule by each of these employers. If the sample is stratified, the control should indicate the code for the strata from which it was selected. Where employers will not respond, methods of selecting substitutes must be devised.

The method of setting up a control for the intake of data and for the routing of returned schedules will vary with the size and complexity of the survey, whether mail questionnaires or personal interviews are employed, and the extent to which data are machine processed. Certain matters, however, will need attention under any circumstance. Controls must be set up to insure that inquiries, once delivered by interviewer or mailed, are received and properly identified, edited and tabulated.

When completed schedules are received from employers, an industry code should be assigned on the basis of the kind of business information reported on each schedule and the schedules separated by sample class within each industry. Care must be exercised to insure that each completed schedule is included in the sample class from which it was originally selected even though the current employment reported may be higher or lower than when the selection was made. For each size group within an industry, separate totals should be obtained of the data reported in each of the columns of the employer reporting form (except Columns 14 through 17) for each of the line items listed in Column 0. For Columns 14 through 17, a tally should be made of the separate codes reported for each of the line items in Column 0.

Following are suggested worksheets for bringing employer data into a form that will facilitate its interpretation.

(a) Worksheet 1, Current and Expected Employment by Industry

Format: This worksheet illustrates a method for tabulating current and future employment data reported by sample employers and for inflating the data to produce universe estimates.

WORKSHEET 1

Worksheet for Obtaining Total Current Industry Employment and Total Employment Requirements in 2 years and 5 years

Sampling Multipliers
(a) Under 20=25
(b) 20 - 99 = 5
(c) 100 plus = 1

Item	Sample		Inflated		100 plus	Inflated Sample Employment	Industry Adjustment Factor	Estimated Adjusted Totals for Industry
	Under 20	20-99	Under 20	20-99				
1	2	3	4	5	6	7	8	9
Industry "A"								
Current Employment Current Trainees Required Employment in 2 years in 5 years								
Industry "B"								
Current Employment Current Trainees Required Employment in 2 years in 5 years								

Instructions:

Sampling Multiplier: Worksheet 1 assumes that the sample has been selected from a list of arrayed establishments and that the sample selection intervals were every 25th establishment of employers under 20; every 5th establishment of employers from 20 to 99 and all firms of 100 and over. Hence the sample multipliers are 25, 5, and 1 respectively. Had area sampling been used for all firms under 100 while a list of firms of 100 and more workers was available and the latter were all surveyed, the multiplier would again be one for the large employers. However, the inflation of the data for the smaller firms would depend on the chance those establishments had of being included in the sample. Thus, if the sampling intervals in a given district had been one segment out of every ten, the data for the sampled establishments of fewer than 100 workers would be multiplied by ten.

Column 1: List each industry or industry group included for coverage in the Area Manpower Survey with subheadings for current employment, current trainees and required employment in two years and five years.

Columns 2, 3, and 6: Enter the total employment as reported for all firms in the indicated size groups.

In the same way, enter employment in two years and in five years.

Column 4: Multiply Column 2 items by appropriate sampling multiplier and enter the results in this column.

Column 5: Multiply Column 3 items by appropriate sampling multiplier and enter the results in this column.

Column 7: Enter the sums of Columns 4, 5, and 6.

Note: Where valid estimates of current employment are available for all or certain industries at the time of the survey (from a census of that date, for example) an adjustment factor may be developed to reduce the sampling error in the final estimates.

To compute an industry adjustment factor, the current employment reported in the upper left corner (item a) of the employer inquiry form should be totaled for all employers in each size class in the industry and each total inflated by multiplying by the appropriate sampling multiplier.

The sum of these groups is the total inflated sample employment. The adjustment factor will be the result of dividing the estimate of total employment obtained from the independent source by the total inflated sample employment. For example, if the independent source total was 14,500 and the inflated sample 13,800 the adjustment factor would be 1.005 (14,500 ÷ 13,800).

The adjustment factor for each industry should be entered in Column 8 of the worksheet. Each of the entries in Column 7 should be multiplied by the adjustment factor and the result entered in Column 9.

The industry adjustment factor may be adjusted for expected employment in future years if the development plan calls for a proportional increase for those years.

There may be instances when dealing with particular establishments in industries in the controlled sector of the economy where two and five year employment projections will be based on manpower projections that are dictated by the economic plan production goals. These projections may reflect, both in the employment totals and their occupational detail, the estimates of a central economic planning or manpower planning agency or they may represent the estimates of the surveyor, himself, translating future production schedules into manpower terms with the help of ratio relationships, occupational matrix material, or such inferences as he can draw from the occupational distribution of the establishment's current employment. Any such establishments originating in sample strata other than the 100% strata, should be excluded from the inflation computation as atypical. Data for these establishments should be added after the information for the remaining establishments in the size class has been inflated.

(b) Worksheet 2: Current and Expected Employment by Occupation

Format: Worksheet 2 is designed as a means for summarizing the reported current occupational information by age groups, the expected future occupational needs, the number of persons expected to complete training courses in the future and current job vacancies. A separate worksheet should be prepared for each industry.

WORKSHEET 2

Current Employment by Age Group, Future Employment Requirements and Trainee Output by Occupation for Indicated Industry

(a) Sampling Multipliers
Under 20 = 25
20-99 = 5
100 plus = 1

(b) Industry Adjustment Factor

Industry ____________

Item	Sample as reported		Sample Inflated		100 plus as reported	Inflated Sample Employment	Adjusted Total for Industry
	Under 20	20-99	Under 20	20-99			
1	2	3	4	5	6	7	8
Occupation "X"							
Current Employment							
Total							
Under 15 years							
15-29 years							
30-44 years							
45 Years and over							
Current Trainees							
Required Employment							
in 2 years							
in 5 years							
Trainee Output							
in 2 years							
in 5 years							
Job Vacancies							
Occupation "Y"							
etc.							

Instructions:

In Item a, Sampling Multiplier, enter the multipliers shown for the industry on Worksheet 1. In Item b, Industry Adjustment Factor--Enter the adjustment factor, if any, from column 8 of Worksheet 1.

Column 1: For each listed occupation in the survey and for the "All Other" category of each major occupational group, the following stub items should be included:

- Occupation (Code Number--if one is used)
- Current Employment - Total
  - Under 15 years
  - 15-29 years
  - 30-44 years
  - 45 years and over
- Current Trainee
- Required Employment
  - In 2 years
  - In 5 years
- Trainee Output
  - In 2 years
  - In 5 years
- Job Vacancies

Column 2: Enter on the appropriate occupation lines the sum of data reported by all establishments in the industry in size class, under 20.

Column 3: Enter on the appropriate occupation lines the sum of data reported by all establishments in the industry in the size class, 20-99.

Column 6: Enter on the appropriate occupation lines the sum of data reported by all establishments in the industry in the size-class, 100 plus.

Columns 4 and 5: Enter the result of the multiplication of figures in columns 2 and 3 by appropriate sampling multipliers.

Column 7: Enter the sum of columns 4, 5, and 6.

Column 8: Enter in this column the result of multiplying the figures in column 7 by the industry adjustment (item b).

(c) Worksheet 3 - Current and Expected Employment by Skill and Entry Requirements

Format: Worksheet 3 inflates and totals the number of workers in jobs with minimum entry requirements and the number of workers in occupations which require an ability to read, write or do simple arithmetic. The information was recorded and summarized by industry and size group on special tally sheets as inquiry forms were initially tabulated. Separate industry worksheets may be maintained to determine these requirements both by occupations and industry, or, as the needs of a particular area may vary, one worksheet may be used to tabulate characteristics by occupations without regard to industry.

WORKSHEET 3

Current Number of Jobs Requiring Ability to Read, Write and Do Simple Arithmetic and the Number of Establishments Reporting Stated Minimum Entry Requirements by Occupation for Indicated Industry

(a) Sampling Multipliers
Under 20 = 25
20 - 99 = 5
100 plus = 1

(b) Industry Adjustment Factor

Industry ______________

Item	Sample				Inflated				100 plus		Inflated Sample Employment		Estimated Adjusted Totals for Industry	
	Under 20		20-99		Under 20		20-99							
1	2		3		4		5		6		7		8	
Occupation "X"	Jobs		Jobs		Jobs		Jobs		Jobs		Jobs		Jobs	
Current Total Employment Necessary Skills: Ability to Read Write Do Simple Arithmetic														
Minimum Entry Requirements a. b. c. d. e. etc.	Establishments	Jobs	Establishments	Jobs	Establishments	Jobs	Establishments	Jobs	Establishments	Jobs	Establishments	Jobs		Jobs
Occupation "Y"														
Etc.														

Instructions:

In Item a, Sampling Multiplier, enter the multiplier shown for the industry on Worksheet 1. In Item b, Industry Adjustment Factor, complete only if an industry adjustment factor was computed on Worksheet 1.

Column 1: For each listed occupation in the survey and for "All Other" category of each major occupational group, the following stub items should be included:

Occupation (Code Number - if one is used)

Current Total Employment:

(Data for this line would be identical with the same item on Worksheet 1 for the occupation.)

Necessary Skills: Ability to:

Read
Write
Do simple arithmetic

Note: Enter the number of jobs (employment) requiring these skills.

Minimum Entry Requirements:

a.
b.
c.
d.
e.
f.
etc.

Note: A quick inspection of entries for each occupation will show that relatively few of the codes from "a" through "l" inclusive will need to be listed in the stub for any single occupation.

Columns 2 through 8 for this item have been split to facilitate the recording of both the number of workers affected and the number of establishments having these entry requirements.

Columns 2, 3 and 6: Enter in the appropriate size class-column the sum of data reported for the occupation by all establishments in the industry. Opposite each of the Minimum Entry Requirements codes, enter in each size class the number of establishments reporting jobs with this requirement.

Columns 4 and 5: Enter the result of the multiplication of figures in columns 2 and 3 by appropriate sampling multipliers.

Column 7: Enter the sum of columns 4, 5, and 6.

Column 8: Enter in this column the result of multiplying the figures in column 7 by the industry adjustment factor, if any, shown in Item b. This step relates only to the job counts.

(d) Worksheet 4: Current and Expected Employment by Industry and Occupation

Format: This worksheet is designed to cross-classify the industrial and occupational details reported separately in Worksheets 1 and 2. A separate column is provided for each industry so that industry totals are readily available for current and expected employment and occupational distributions of age categories, anticipated employment needs, training completion schedules and current job vacancies. Occupational totals for the whole area regardless of industry are also accumulated in column 2 of this worksheet.

WORKSHEET 4

Total Current Employment, Total Required Employment, in 2 Years and 5 Years, by Industry and Current Employment By Age Group, Required Employment in 2 Years and 5 Years, Trainee Output in 2 Years and 5 Years and Job Vacancies by Industry and Occupation

Item	Total All Industries	Selected Industries									
		A	B	C	D	E	F	G	H	I	etc.
1	2	3	4	5	6	7	8	9	10	11	12
Total Current Emp. in Ind.											
Total Required Emp. in Ind.											
In 2 years											
In 5 years											
Current Trainees											
Occupation "X"											
Current Employment Total											
Under 15 years											
15-29 years											
30-44 years											
45 years and over											
Required Employment											
In 2 years											
In 5 years											
Trainee Output											
In 2 years											
In 5 years											
Job Vacancies											
Occupation "Y"											
Etc.											

Techniques For Determining Manpower Skill Needs and Training Requirements

Instructions:

The information in industry columns 3, 4, 5, etc. for each item listed in column 1 is obtained from Worksheet 1 and 2 as follows:

Total Current Employment in Industry

Total Required Employment in Industry -- *All Entries are from column 9, Worksheet 1, for the appropriate item and industry.

- In 2 years

- In 5 years

Current Trainees *

Occupation "X" -- **All entries pertaining to occupations are from column 8, Worksheet 2, for the appropriate item and industry.

- Current Employment Total
    - Under 15 years
    - 12-29 years
    - 30-44 years
    - 45 years and over

- Required Employment
    - In 2 years
    - In 5 years

- Job Vacancies

Add the data in individual industries, columns 3, 4, 5, etc., and enter the result for each item in column 2.

(e) Worksheet 5: Current Employment by Occupation and Skill Requirements Within Industry

Worksheet 5 illustrates a method of accumulating the occupational requirements for existing jobs to an all industry total. The totals from Worksheet 3 for each of the industries are added to show on Worksheet 5 total numbers of individual positions requiring reading, writing and arithmetic abilities and the total of various entry requirements that workers must possess for existing occupations in the area.

Instructions:

The information in industry columns 3, 4, 5, etc., for each item listed in column 1 is obtained from column 8 of Worksheet 3.

Add the data in individual industries, columns 3, 4, 5, etc., and enter the result in column 2.

WORKSHEET 5

Total Current Number of Jobs and Number of Jobs Requiring Ability to Read, Write, and Do Simple Arithmetic; and the Total Number of Establishments With the Number of Establishments Reporting Stated Minimum Entry Requirements by Occupation and Industry

Item	Total All Industries	Selected Industries									
		A	B	C	D	E	F	G	H	I	etc.
1	2	3	4	5	6	7	8	9	10	11	12
Current Total of Jobs in Ind.											
Current Total of Estabs. in Ind.											
Occupation "X"											
Current Total of Jobs											
No. of Jobs Requiring Ability to											
Read											
Write											
Do Simple Arithmetic											
No. of Estabs. Rptg. Jobs in Occ.											
No. of Estabs Requiring Min. of											
a.											
b.											
c.											
d.											
e.											
f.											
g.											
h.											
etc.											
Occupation "Y"											
Etc.											

PART II

CHAPTER VI

Collection and Processing of Data (Cont'd)

a. Employer Data (Cont'd)

4. Employment Needs of New Establishments

After all Employer Inquiry Forms have been returned and processed, estimates are available of current employment in the selected occupations and industries and anticipated employment 2 and 5 years hence for existing firms.

These forecasts, however, do not reflect total projected demand for skilled workers. Upward adjustments must be made for new plants proposed in the economic development plan which will require additional skilled workmen during the forecast period of the survey, for the skills necessary for building these plants and other construction planned for the future, and for added skilled workmen who will be needed to staff the new plants when the construction phase is completed.

Economic plan projections may clearly indicate that new establishments will be built and brought into operation during the forecast period and various activities expanded. These economic projections which have not been translated into manpower forecasts in the employer inquiry form must be provided for in the survey. "Dummy" employer inquiry schedules should be completed by the surveyor with assistance from economic and manpower planning agencies.

Projected construction manpower needs are generally computed by dividing that part of the contemplated expenditure which is estimated for labor costs within a specified period by the average wage paid to labor per day, and arriving in this way at the number of man-days involved (which may be converted to man-years for extended projects). The components of labor to total cost will differ greatly for different kinds of construction as will the occupational composition of the work force. Labor needs for road building (which may, by design, be labor-intensive or capital-intensive as to the construction methods used) will differ vastly from the labor needs for a housing project, a petroleum refinery, or a hydroelectric facility.

If schedules from building firms have been collected they should be carefully inspected for any light their occupational composition in relation to their "units of production" may cast on the projected new enterprise. Government agencies concerned with construction, large local construction companies, and foreign contractors are possible sources of information in estimating the occupational composition of the work force on projected construction projects.

Where operating manpower needs must be computed for new facilities going into production during the forecast period, the experience in the country should first be studied to determine if plants in that industry are already in operation there, and if the new plant will be at approximately the same level of technological development as the older ones. In cases where it is reasonable to extrapolate the experience in the country to the new facilities, "product" information on the employer inquiry schedules (providing the "product mix" does not introduce an additional problem element) should be helpful.

Where the planned facility is in an industry not previously introduced in the developing country, information on occupational composition and size of employment in relation to planned production should be sought in the neighboring country most nearly resembling the developing country as to productivity of labor and industrial practices. If no neighboring country has had experience with the projected industry, other possible sources of information are the contractor who may have been assigned to build the plant (particularly if a foreign contractor), information on hypothetical models that may be obtainable from the Washington Headquarters of the Bureau of Labor Statistics, the Agency for International Development, and the Industrial Engineering Departments or other appropriate departments of universities with knowledge of the industry and of conditions in the particular country involved.

In some cases, projected employment figures may be needed because of a planned extension of certain activities or services. Sometimes information may be based upon certain units, eg., that transport activities will be increased by "X" number of trucks. Information may be available indicating that each truck in service provides employment for "X" number of workers (one developing country estimates five workers will be employed for every vehicle in service). In other cases, it may be known that the economic plan goal is to expand various types of social services to villages and rural areas by a stated, budgeted amount. The additional expenditures allocated to labor will have to be converted into units of personnel and the occupational distribution of the added manpower estimated on the basis of current practices.

If figures are available over the plan period as to additions to the stock of consumer durables requiring maintenance, such as autos or television sets, judgment estimates based on current ratios of repairmen to these durables should be made.

If economic plan goals envisage raising the per capita ratio of physicians or dentists, or even of maintaining current ratios against an expanding population, the increase should be computed using the best projected population estimates obtainable for the forecast dates.

Sometimes expanded services can be tied to some base other than expected population growth, i. e., increased school enrollment for computing expected additions of school teachers and other school personnel; hospital beds for computing anticipated gains of nurses and other hospital personnel; or numbers of vaccinations for computing needed increments of medical technologists.

Many adaptations of the approaches given in the above examples will be required in order to take care of the various situations that will require this type of estimating.

PART II

CHAPTER VI

Collection and Processing of Data (Cont'd)

b. Training Institution Data

Training Institutions Questionnaire: To obtain information on the total potential supply of trained manpower, an analysis must be made of the expected output of graduates of the educational system in the area as defined for the survey, to supplement the training information obtained from the employing establishments.

The Area Manpower Survey Training Questionnaire proposed to obtain this information is designed for use at those levels in the developing country's school system from which students leave or graduate to enter the labor market, whether these are elementary schools, junior, intermediate or senior technical schools, commercial schools, colleges, professional schools, or other types of institutions where formal training is given.

All training institutions (except in-plant training programs of employing establishments) in the area should be requested to complete a questionnaire. Information as to the number and location of their institutions should be available from local or central education authorities. It may be necessary to supplement the education authorities' lists with information from other government officials and, in some instances, from private industry officials.

The questionnaire is made up of two parts. The first part requests summary information on the number of graduates and nongraduates who, last year and for each of the forecast period years, did or will enter the labor market, continue education or otherwise fail to enter the labor force.

The second part of the questionnaire provides information on the occupation the graduates and drop-outs are qualified to enter as the result of their training.

For the purposes of completing Section 2 of the questionnaire, each school should be provided a list of appropriate occupations to be reported. A commercial school might receive a list specifying such occupations as accountants, bookkeepers, secretaries, statistical clerks, and typists which could be supplemented by the school where other occupations for which that institution was preparing its students had been included in the list.

Depending upon local curriculum design, hiring practices, and the way the data were to be interpreted, it might be advisable to add the option on schedules given colleges and universities of reporting a field of study instead of an occupation in those instances where information was insufficient to assume the probable occupation. Examples would be "social science," "natural science" or "language" where it appeared unwarranted to assume the student was prepared to become a teacher of social science, natural science, or languages or an economist, bacteriologist, interpreter, or some other listed occupation, or occupation the school authority would have chosen on a purely arbitrary basis.

Dates of school years given on the proposed Training Institution Questionnaire are to serve as examples only. The first column should cover the school year completed prior to the survey. Data for the succeeding five years should be entered in the columns following. The column captioned "Leave Blank" are provided for the survey technician to enter totals for the two and five year forecast periods for which data were collected on the employer inquiry form.

If a sex distribution of the data collected from training institutions is wanted, it is suggested that schedules marked "men" and "women" be given co-educational schools.

Where detailed information is available at the Ministry of Education or at another source concerning the curricula and progress of students studying abroad, a questionnaire appropriately modified, together with a relevant list of occupations and courses of study could be used for the collection of data concerning these students. If attrition because of the failure of such students to return is heavy, totals should be discounted accordingly.

AREA MANPOWER SURVEY
TRAINING INSTITUTION QUESTIONNAIRE

Section I

Name of School ____________
Date ____________

Estimates of Student Output

Line No.	GRADUATES	During School Year							
		1961-62 (Just Ended)	1962-63	1963-64	Leave Blank	1964-65	1965-66	1966 67	Leave Blank
1.	Total Graduating								
2.	Number Entering Local Labor Force								
3.	Number Continuing Education at other than College or above								
4.	Number Continuing Education at College or College Graduate School								
5.	Other Plans--Emigration, Marriage, etc.								

Note: The sum of entries on Lines 2 through 5 should equal the total of entry on Line 1 for each school year.

Line No.	NON-GRADUATES	During School Year							
		1961-62	1962-63	1963-64	Leave Blank	1964-65	1965-66	1966 67	Leave Blank
6.	Total Dropouts								
7.	Number Entering Local Labor Force								
8.	Number Continuing Education at Other than College or above								
9.	Other Plans--Emigration, Marriage, etc.								

Note: The sum of entries on Lines 7 through 9 should equal the total of entry on Line 6 for each school year.

IMPORTANT: The totals shown on Lines 2 and 7 above are to be distributed to the occupations listed on Section II of the following pages. If appropriate for a particular survey, a separate Section II should be prepared for the graduates and the dropouts who enter the labor force.

AREA MANPOWER SURVEY

TRAINING INSTITUTION QUESTIONNAIRE

Name of School ____________________

SECTION II

Date ____________________

Note: For those students listed in Section I as entering the local labor force (Lines 2 and 7) indicate the number trained and qualified to go to work in the listed occupations (or other occupations you might suggest). Your total distribution in this section should equal but not exceed the estimates on Lines 2 plus 7 of Section I.

Occ. Code	OCCUPATION (in which trained and qualified to go to work)	Going to Work - From School Year:						
		1961-62 (Just Ended)	1962-63	1963-64	1964-65	1965-66	1966-67	Leave Blank
	TOTAL ENTERING LOCAL LABOR FORCE EACH YR.							
	(Lines 2 plus 7, Section I)							

Note: Where both 2 and 5 year estimates are requested on the Employer Inquiry Form, it will be necessary to insert following the 1963-64 column an additional "Leave Blank" column. This will permit two year accumulations of training institution output as was done in Section I.

PART II

CHAPTER VI

Collection and Processing of Data (Cont'd)

c. Data Pertaining to Workers With Higher Education

An Area Manpower Survey does not usually include a survey of the utilization of workers who have completed college or university work. There will be instances, however, where information is needed on the contribution recent graduates are making to the developing economy by practicing their speciality.

Because of the time and cost of locating and questioning student respondents and graduates, this type of questionnaire should be used only for those trained to work in high level professional, managerial, and technical occupations. Further, it should be used only when a serious problem is known to exist and an action program is needed to alleviate the situation. Examples are the substantial unemployment of educated youth or the failure of foreign trained students to be readily assimilated in the local labor market.

When such information is needed, it can be obtained by requesting recent graduates from institutions of higher learning to complete a questionnaire such as that illustrated below.

Data collected from these respondents would not be a part of the statistical manpower appraisal contained in the Area Manpower Survey unless the questionnaire was used to gather information on unemployed manpower supply by occupation. Rather, this information, if significant would be presented in the "Summary of Findings and Recommended Actions."

The best opportunity for obtaining a valid sample of recent graduates and school leavers (over the past five years, for example,) is to request lists of their names and last known addresses from educational institutions at the time the latter are contacted for completion of the Training Institution Questionnaire. If such lists are obtainable, a random sample can then be selected for personal interviews. If resources are not adequate to meet the needs of this procedure, a mail questionnaire could, if desired, be sent all names appearing on the list, with the expectation that the response would be large enough to yield a return sufficiently numerous and representative to support a reasonable amount of generalization.

With some modifications the proposed Questionnaire for Recent Students of Local Institutions of Higher Education could be used to obtain information from returned graduates of foreign institutions whose names and addresses might be available from the Ministry of Education, Ministry of Foreign Affairs or from other sources. Or with further modification, this questionnaire might be used to poll the unemployed in certain occupations when their names and addresses can be obtained from Employment Service active application files. If a survey of the latter type were undertaken, it would presumably include former students of both local and foreign institutions.

QUESTIONNAIRE FOR RECENT* STUDENTS OF LOCAL INSTITUTIONS OF HIGHER EDUCATION

1. Name (optional) ________________________________

2. Present address (optional) ________________________________

3. Sex: Male (_) Female (_) 4. Birth date: Month (_) Year (_)

5. Family status: Single (_) Married (_) Widowed, divorced, or separated (_)

   Number of children: None (_) one or more (_)

6. Education (complete items for highest-level school attended)

   Name of Institution ________________________________

   Years attended ________ Graduated (_) Did not graduate (_)

   Degree, Certificate, License, etc. received ________________

Type of Program (check one)		Major Subject (complete for item checked)
Liberal Arts	________	________________
Vocational	________	________________
Professional	________	________________
Business	________	________________
Other (specify)	________	________________

---

* Within not more than five years.

7. Do you plan to enroll for further full time study within one year
   Yes (_) No (_)

8. If answer is Yes, enter

   Full time (_) Part time (_)

   Type of program: Major Subject ________________ ________________

   Institution if known ______________________________________

9. Employment

   Are you now working full time (_) working part time (_)
   without a job and seeking work (_) without a job and not seeking work (_)
   If without job and not seeking work, would you work if a job for which you believe yourself qualified were offered you with customary working conditions ? Yes (_) No (_)

10. If employed

    Are you self employed? Yes (_) No (_)
    Industry of Employer, if not self employed,or of your establishment, if self employed ______________________________________

    Your occupation ______________________________________

    Length of employment with present employer Years (_) Mo. (_)
    Length of employment in present occupation Years (_) Mo. (_)
    Grade, rank, classification (where significant) ________________

11. Did your education qualify you for your first job with your present employer? Yes (_) No (_)

    Was your education greater _____ less _____ or in a different course of study _____ than the employer required? (check one).

    Have you been advanced in rank from level of your first job with present employer? Yes (_) No (_)

12. List briefly duties of present job

    ____

    ____

    ____

13. If you do not believe your present job a suitable one for you, considering the type of education you received:

    What type of job would better fit your education? ________________

    What type of education would better fit a worker for your present job?

    ____

PART II

CHAPTER VI

Collection and Processing of Data (Cont'd)

d. Summarization of Data

1. Estimate of Replacement Needs

Total estimates of future manpower needs in the surveyed occupations will include expansion needs forecast on the employer inquiry schedules for the two and five year estimates of required employment, the replacement of cumulated attrition to these dates, and the requirements of the new plants contemplated in the economic development plan. Methods of computing these replacement needs will vary greatly depending upon circumstances in the country and the resources available.

Where it is an announced policy of government to replace, during the forecast period, all or most foreign workers currently employed, an additional column must be added to the employer inquiry schedule and worksheets to record the number of foreign nationals now working. An experienced surveyor has reported this replacement need to be the largest single item in the increased number of "high level" personnel needing to be trained in one developing country. In the absence of labor force separation rates by age groups, replacement needs due to death and retirement must be estimated by less formal methods. For example, a simple and rough way to compute replacement needs due to retirement is to select an arbitrary age such as 45 years, 1/ and to assume

---

1/ In selecting an arbitrary age, reference may be made to life expectancy data for the country if available. Great care must be exercised in the selection, however, because adverse experience in mortality occurs during infancy and life expectancy figures may not give a true indication of the approximate age that should be chosen. Some authorities consider life expectancy of workers who have reached a mature age in other countries to be only about ten years less than the U.S. figures.

that age to mark the point at which most workers will separate from the labor force. Thus, replacement needs for retirees would equal the number of workers reaching age 45 during the forecast period of the survey.

Another method is to add comment questions to the employer inquiry schedules requesting the employer to report how many of his workers in each of the age classes given in the questionnaire separated their employment in the previous year because of death or retirement. The total of these separations for each age group can then be computed as a percentage of all in these age groups who are working for the reporting employers and these percentages applied to the estimate of total employment at the time of the survey will yield a rough estimate of the annual loss. Such losses can then be cumulated year by year, to give estimated wastage to the end of the forecast periods. The weakness in this method, is that it assumes the establishment's size remained the same over the year, and that the age composition of its work force will not change significantly during the forecast period. It would, however, yield a more precise estimate of replacements due to retirements than the device of assuming an arbitrary age of separation from the labor force.

The best method for estimating expected replacement needs due to deaths would be to obtain from the central statistical agency or from some source qualified to construct such a table, a labor force life table based upon vital statistics data concerning labor force mortality. The rates of separation should be related to the age distribution used in the employer inquiry schedule, and the projected losses obtained with these rates, cumulated year by year through the forecast period. When such a table can be constructed from data in the country (or from data of a neighboring country where the population has a similar life expectancy), these ratios are applied to the number of workers in a given age group in an occupation, irrespective of the occupation, unless information is available indicating that vastly different labor force separation rates are typical of certain jobs. (For a simplified method for constructing life tables see AID monograph Demographic Techniques for Manpower Planning in Developing Countries).

2. Estimates of Trained Manpower Supply

Total forecast trained manpower supply when it is balanced by occupation against manpower requirements for such personnel should include:

(a) Entries on Employer Inquiries covering workers participating in in-plant training programs.

(b) Trainees in formal apprenticeship programs or other formal vocational programs who were not included in the above who will complete training and enter the local labor market during the forecast period.

(c) Students reported by training and educational institutions of all types who will enter the local labor market during the forecast period, or who have entered the labor market at the end of the most recent school year if it can be assumed there has not yet been time for their absorption into employment.

(d) Students studying abroad where their course of study can be determined and also where it can be reasonably assumed they will return to the local labor market during the forecast period.

(e) It will be rare that information on the skills of the unemployed will be available in a developing country. There may be instances of plant closings or removals or recent lay-offs about which information may be obtained on the number and skills of the pre-lay-off work force.

3. Summary Worksheets

Worksheets 6, 7, 8, and 9 illustrate methods for summarizing the data developed from information on the earlier worksheets. These summary worksheets are designed to facilitate analysis of the data and to present them in a form that can be adapted to the final report.

WORKSHEET 6

Employment by Age Group for Surveyed Occupations

EMPLOYMENT					
Occupation	Total-All Ages	Under 15	15-29	30-44	45 and over
1	2	3	4	5	6

Instructions for Completing Worksheet 6

Worksheet 6 summarizes for each listed occupation and for the "All Other" category in each major occupational group, present employment by age groups.

Column 1: List each occupation in the Area Manpower Survey. Where occupational codes have been used, occupations should be listed by code.

Column 2: Enter for each occupation the employment total for the occupation from column 2 Worksheet 4.

WORKSHEET 7

Current Employment and Required Employment in 2 Years and 5 Years in Surveyed Occupations

Occupation	Current Total Employment	Expansion Needs		Replacement Needs		Total Additional Requirements	
		In 2 Years	In 5 Years	In 2 Years	In 5 Years	In 2 Years	In 5 Years
1	2	3	4	5	6	7	8

Instructions for Completing Worksheet 7

Worksheet 7 summarizes 2 and 5 year expansion and replacement needs for each listed occupation and for the "All Other" category in each major occupational group.

Column 1: List each occupation in the Area Manpower Survey. Where occupational codes have been used, occupations should be listed by code.

Column 2: Enter for each occupation, the employment for that occupation from column 2, Worksheet 4.

Columns 3 and 4: Subtract the current total employment for each occupation from the 2 and 5 year required employment for that occupation in column 2, Worksheet 4, and enter the difference in the appropriate column of Worksheet 7.

Columns 5 and 6: Enter in these columns the 2 and 5 year replacement needs for each occupation as estimated by use of such procedures as the surveyor finds most practicable (see discussion on estimating replacements, page 90). In some instances entries in columns 5 and 6 may include replacements for foreign nationals as well as for separations from the labor force.

Column 7: Enter the sum of entries in columns 3 and 5 for each occupation.

Column 8: Enter the sum of entries in columns 4 and 6 for each occupation.

WORKSHEET 8

Manpower Supply Available in 2 Years and 5 Years for Surveyed Occupations

Occupation	Trainee Output		School Output		Manpower Supply Available	
	In 2 years	In 5 years	In 2 years	In 5 years	In 2 years	In 5 years
1	2	3	4	5	6	7

Instructions for Completing Worksheet 8

Worksheet 8 is provided for use in summarizing estimates of labor supply available in 2 years and 5 years.

Column 1: Enter each listed occupation in the Area Manpower Survey. Where occupational codes have been used enter by code.

Columns 2 and 3: Enter the 2 and 5 year trainee output from column 2, Worksheet 4.

Columns 4 and 5: Enter the best available estimates of the number of persons who will have completed school training for each of the listed occupations by the end of the 2 and 5 year periods. This estimate is to be based on returns from the Training Institution Questionnaire. Where warranted, estimates of expected numbers by occupation of local students returning from training in foreign schools should be included in columns 4 and 5. In certain occupations, it will be necessary to exercise great care not to include in columns 4 and 5, persons already included in columns 2 and 3.

Column 6: Enter the sum of the data in columns 2 and 4 for each occupation.

7. Enter the sum of the data in columns 3 and 5 for each occupation.

WORKSHEET 9

Occupational Needs in 2 Years and 5 Years and Estimated Manpower Supply Available to Meet Needs

Occupation	Total Currently Employed	Workers Needed for Expansion and Replacement		Manpower Supply Available		Workers Currently Unemployed
		In 2 years	In 5 years	In 2 years	In 5 years	
1	2	3	4	5	6	7

Instructions for Completing Worksheet 9

Worksheet 9 presents a comparison of occupational manpower supply and demand estimates.

Column 1: Enter each listed occupation in the Area Manpower Survey. Where occupational codes have been used, enter by code.

Column 2: Enter for each occupation, the employment total for the occupation, from column 2, Worksheet 4.

Columns 3 and 4: Enter for each occupation the total additional requirements for that occupation from columns 7 and 8 of Worksheet 7.

Columns 5 and 6: Enter for each occupation the total manpower supply data from columns 6 and 7 of Worksheet 8.

Column 7: Enter the number of unemployed in each occupation if such data are available (See page 33).

In some instances it may appear useful to add a column for "surplus workers" to this worksheet or to include these workers in column 7. See the discussion on estimating trained manpower supply. (Page 92)

PART II

CHAPTER VII

Format For Final Report

The fields of information from which an Area Manpower Survey draws and also the several ways in which this information may be oriented have been described above. How the many types of data that are collected in the course of the survey can best be organized and presented will depend upon various specifics attached to the circumstances under which each survey was conducted and to the particular developing country in which it was conducted. An example, however, of one way whereby the contents of an Area Manpower Survey may be organized is given below:

Foreword: Identification of the unit responsible for conducting the survey is indicated and, when appropriate, individuals and other agencies who have participated are acknowledged.

Introduction: This concise statement includes the relationship of the manpower situation, current and expected, to the overall economic plan. It describes the primary purpose of the survey; namely, to determine future manpower requirements and to assist in providing adequate supplies of trained manpower as needed.

Summary of Findings and Recommended Actions: Major manpower needs are briefly summarized together with the surpluses or shortages anticipated when needs, as shown in the survey, are balanced against expected output of trained manpower. Other findings such as those concerned with utilization of trained manpower, the promptness with which foreign-trained graduates are absorbed into local employment or the influence of various external factors on the labor market can be presented when relevant. If the organization and sponsorship of the survey make it appropriate to do so, such action

Economic Characteristics: This section includes the definition of the area covered, the scope of the survey with respect to industries and occupations selected, and whatever information is available as to current and forecast population, labor force, total employment and trends in the area's employment.

Findings: This section should contain a careful analysis of the data collected for the survey. The subsections would include a discussion of occupational requirements for expansion of established facilities, for staffing of new facilities and for replacement. A subsection on training output describes the manpower supply to become available locally by the forecast periods from in-plant training in the surveyed establishments and at other facilities local and foreign. The concluding portion of the analysis would be an assessment of the adequacy of expected output to meet future expansion and replacement needs.

Methodology: The techniques and procedures used in conducting the survey are described. These include the criteria used for delimiting the geographic, industrial and occupational scope of the survey; the sampling methods used; the planning objectives and economic assumptions considered as characterizing the forecast periods; and any factors which might tend to limit the validity of the forecast data.

As stated in the body of this Handbook, developing countries, because they account for most of the earth's surface and its population, are more unlike than like each other. The same dissimilarity will no doubt characterize the Area Manpower Surveys which are prepared to appraise manpower needs and assess manpower supply in these countries.

Some surveys will be conducted by foreign technicians and others by technicians of the developing countries. As mentioned before, many variations are possible as to scope and orientation. Resources available to the technicians preparing these studies will vary over a wide range as will the difficulties confronting them. In some cases, survey findings will be designed for government officials alone; in other instances they will be circulated to an interested public.

Because of these many diversities, it is not possible to prescribe any specific format the findings should follow or any particular manner of presentation beyond that discussed.

Whatever form the final survey assumes, however, the cost and effort of making these studies is such that certain aims should characterize them all.

No survey should ever be conducted for the mere purpose of making a survey. This task must be undertaken only because definite problems in the manpower demand-supply relationship exist in the developing country or such difficulties are expected to emerge shortly.

Data should be collected that will bear directly on these problems entailing, possibly, greater reliance on "comments" questions than would be needed in a more advanced country. In developing nations, these surveys must be designed specifically to detect training problems that will induce manpower shortages or surpluses because of the economic and political dangers inherent in both. As these Area Manpower Surveys must, indeed, be guides to future policy rather than academic exercises in estimating employment, the surveyor's good judgment and knowledge of local conditions will fequently be of more importance than the sophistication of the statistical techniques and data resources available. The worth and value of an Area Manpower Survey will very largely rest upon the soundness of recommended action programs derived from its findings.

PART III

OCCUPATIONAL GUIDES

There are many indications that manpower resources are not in balance with current labor needs. World-wide shortages of well-qualified professional, technical, managerial, and often clerical and skilled personnel are one evidence. Another is the lack of the proper phasing in the concurrent development of workers and jobs. In developing countries, for example, workers desert the traditional economy before opportunities in the modern sector are sufficiently plentiful to absorb them. Regardless of the stage of industrial or social evolution, the problem is the same; too many people are not prepared for the demands and requirements of today's world. How serious this problem is today in any country depends on the degree to which it has initiated social and economic changes that are beyond the capabilities of its manpower resources. The seriousness of this imbalance in labor needs with manpower resources in the future will depend on the foresight applied today in the management of these human resources.

One method to provide the necessary information to accomplish this balance in the supply and demand for manpower is the preparation of the comprehensive area manpower report from the data acquired in the Area Manpower Survey. However, there is another important and meaningful form in which the manpower information related to specific occupations may be presented. This occupational labor market information, the Occupational Guide, combines specific occupational data as collected in the Area Manpower Report with supplemental occupational questionnaires and information collected from other sources. It provides a means for government officials, educators, employers and other authorities on specific occupations to communicate their knowledge of the requirements and prospects for certain jobs to prospective entries into that occupation.

Content of an Occupational Guide

The Occupational Guide deals with the economic and social forces influencing the worker-job relationship in a particular occupation or group of occupations. It indicates the requirements for holding the job and how the job is obtained. The need for occupational labor market information will grow with the degree of industrialization and resulting job specialization. Detailed knowledge of job content will be required increasingly in the developing country. For example, if the public employment service operations are to be effective in dealing with a growing complexity of occupations, it must have full knowledge not only of the experience and skill required to do the job successfully but also of the personal attributes the worker must bring to the job. Training officials need this information equally if their students are to be prepared for the specialization demanded in a complex job market. Employers have a real interest in the development of better job knowledge if their demands for qualified workers are to be met. Young persons making a vocational choice need facts going far beyond those likely to be known to them or their parents, or to their teachers in general educational institutions. The preparation of Occupational Guides combines information from many sources and completed Guides have wide use. The content of this particular type of occupational literature, however, is tailored largely to the needs of counselors and job applicants.

An Occupational Guide (or "Job Brief" or "Career Pamphlet" as these documents are also called) will usually cover the following subjects:

The Guide will contain a clear definition of the occupation or group of occupations under consideration with a sufficiently precise description of job duties and working conditions that the reader can visualize the job situation and perceive the way of life he would probably come to follow were he to choose this vocation. Employment prospects are pictured, both as to the extent of present job opportunities in this line of work, and the longer range prospects in the occupation. Hours worked, wages paid, and lines of advancement are specified. Most important, educational and training requirements, personal qualifications, and aptitudes are detailed in an attempt to show how the individual wishing to enter the occupation should judge his capacity for it, and what he would need to do to prepare himself to meet its specifications.

Occupations Selected for Occupational Guides

The occupations to be stressed in these studies should be decided upon in relation to the general framework of economic planning. An effort should be made, therefore, to concentrate on the long-training-time occupations. However, within this category, the priorities for selection would differ in relation to the direction of economic planning. Where emphasis lay upon rapid industrialization and the modern sector of the economy, interest would tend to center on those scientific, engineering, technician, and skilled jobs associated with factory production. Were the process of industrialization planned to be a slower one, more attention might be given to agricultural and health technicians in middle and lower-order skills, social workers, and craftsmen in traditional lines of work. In either case, teachers and construction workers of various types would probably receive high priorities.

The scope and orientation of an Occupational Guide program, however, should be broader than its direct assistance to economic development if it is to serve its announced purpose of helping young persons make a career choice. The capabilities of individual counselees must be considered as well as economic targets and social goals, not that serving any one of these aims necessarily excludes advancing the others.

Occupations experiencing current labor shortages are suggested for inclusion in a Guide program, primarily to learn what the shortage may indicate. A worker deficit may mean that the occupation, although necessary for industrial expansion or the public good, is comparatively new and is not likely to gain the attention of students and job applicants unless it is publicized. It may be a long-training-time occupation so that every year enrollments lag in this field, future shortages of greater proportions can be expected. The occupation, too, may be one whose aims are little appreciated for want of public understanding or whose importance is discounted because of misguided prejudice against its apparent lack of status.

Surplus occupations are often worth studying to learn what allied fields of work afford outlets for the interests and abilities of the surplus workers. Jobs in which applicants express a continuing interest also deserve investigation. The very fact of this interest may mean that too little is known about the occupation, or that applicants have unrealistic notions about prospects of this kind of employment. Jobs that are important numerically in the community call for study as do those likely to grow greatly in importance in the future, particularly if these involve considerable formal training before the worker can be considered qualified.

At the outset of the program, employment service personnel, in countries where a public employment service exist, are eminently well qualified to select these occupations to be studied. As the program matures, however, suggestions should be requested from educators, employers, professional associations, labor unions, government agencies and others associated with the labor market.

One developing country which has prepared 88 career pamphlets so far has chosen a many-sided approach in this matter with a choice of occupations oriented to the needs of the individual as well as to those of the total economy. Occupational selections have been directed to the interests of country and town, skilled worker and scientist, consumer and business man. These pamphlets include "Careers for School Leavers," as well as several of the engineering professions; the "Extension Officer in Community Projects"; Town Planner; Plumber; Meteorologist; and careers in nursing and social work in addition to office skills.

Uses For an Occupational Guide

As the division of labor continues in a developing economy and specialization occurs, there will be less general understanding by persons in the economy of the occupational characteristics of jobs other than their own. This lack of understanding will make it difficult for people, especially new entrants to the labor force to adequately evaluate the requirements and the contributions of different jobs. Hence, the Occupational Guide will be needed to transmit this necessary information across occupational barriers.

Some of the institutions and persons who will apply this source of knowledge to improve the functioning of the labor market would include the public employment service which can use Occupational Guides and the information gained in preparing them to train their own workers in job development, and to improve their placement operations. Schools find the Guides helpful in designing their curricula, contacting employer and worker organizations, and in seeking funds for new and needed programs. Employers are assisted by these documents in recruitment, drawing up job classification schemes and wage schedules, and training new employees. Professional organizations and trade unions look to the Guides for the definitions of job duties they contain and for the help these documents can give members of an occupation as they seek a wider appreciation of their job standards and work objectives.

Occupational Guides have been called for by universities for counseling their students, by municipalities to acquaint the public with the roles of public servants, by licensing boards concerned with the standards to be observed in a new trade, and by apprenticeship councils when evaluating their programs. Yet every one of these uses is essentially secondary to the primary purpose of the Guides.

This purpose is employment counseling of: 1) the student so that his vocational choice will reflect an understanding of the future demands he must meet to be successful and of his future prospects in the occupation chosen; 2) the physically handicapped, seeking a new and less demanding type of work; 3) the serviceman returning to civilian life; 4) the older person reentering the labor market; or 5) the worker possessing a skill that has become obsolete or who desires to elevate himself from an unskilled status.

The Guides can contribute to public education of a more general sort when publicized properly in appropriate journals, the press, and at meetings where it is pertinent to disseminate occupational information. For example, it can be invaluable in the campaign against a prejudice that downgrades all work done with the hands, or that frowns upon scientific and technical training, preferring such time-honored fields as languages and the law. Information contained in Guides can help to inform the public more widely than might otherwise be possible as to the importance of comparatively new lines of work such as nucleonics, electronics, and electronic data processing, or of the immense social significance of increasing the supply of workers in such public service occupations as teachers, nurses, and health technicians. And finally, the Guide program like the Periodic Area Manpower Report offers the developing country a chance to keep open, on a continuing basis, a channel of communication between economic plan authorities and such individuals in the field as employers and educators, with the employment service gaining both information and importance from its position at mid-center in the flow of data.

Sources of Information For an Occupational Guide

Where there is a public employment service, it is fitting that this agency, with its central position in the labor market should look inward and utilize the experience of its own personnel in producing the Occupational Guides. Experience in the United States has indicated, however, that to be of maximum usefulness a Guide program must be a community program, but it is the employment service that is uniquely fitted to organize the effort and to make the major contributions.

To insure community participation, a standing committee should be formed to permit representatives from the central training agency, economic plan group and, possibly, the central statistical agency to participate in formulating the plans for the Guides and in other ways contributing their ideas. Depending on the circumstances of the specific country, representatives from management, labor, trade associations and professional associations might be useful additions either on a continuing or an ad hoc basis.

Once a Guide is commissioned, the person in charge of the enterprise whether it was directed from the national or a lower level should see to it that the information resources within the local employment exchanges are not overlooked. It is true that these local exchanges play a larger role in the hiring process of some occupations than of others. Nonetheless, such documents as job order specifications, referral and placement records, and job applications should always be checked at the outset of a Guide study. Most important, also, is reference to the opinions and professional judgment of personnel in these exchanges who have specialized in the occupation.

This consulting of the immediately available resources of the employment service will provide at least some indication as to the prevailing conditions in the labor market for the occupation under review. More important, it will probably suggest many questions concerning the occupation that can only be resolved by outside sources.

Before questions are framed for these outside sources, however, bibliographical sources should be checked exhaustively. At an early stage in the study, the occupation should be rigorously defined in terms of the classification system used in the developing country. Or if this furnishes no appropriate title for the job or group of jobs being studied, the occupation should be no less carefully defined in the light of local custom and practice. More general information on the occupation than its definition should be sought in the occupational literature of the country where the Guide is being prepared. If such does not exist, published occupational materials from other countries should be consulted. Even though these will not describe the current local situation of the home country, they will provide many valuable hints as to job duties and trends in employment prospects. Most of all, these foreign materials will establish a base against which respondents can be questioned as to the local situation -- does it resemble that of the foreign model or does it differ? If it differs, in what particulars?

Previous to the actual field work, too, there should be an effort to establish as much statistical groundwork for the Guide as outside sources can provide. While it is true that in the early stages, of a Guide program, it may be necessary to concentrate on job duties, training requirements, and general observations as to expected changes in the occupation,the program will be a sounder one when it has reasonably firm statistics of current employment and future manpower needs, both for expansion and the replacement of turnover. As in the Area Manpower Survey, these are the figures needed if the Guide is to be of maximum use to educators, counselors, and to the counselees.

Hence, any Guide that can rest upon information developed for a recent manpower survey is off to an excellent start. If this information is not available, census and other public records should be checked. Occasionally, it may be possible to construct at least preliminary estimates which are derived from counts of other than workers such as licenses, amount of a given kind of equipment in operation, tax permits, number of retail outlets, production of goods, or the like. Occasionally, also, records of private organizations can be helpful such as professional associations or labor unions, but these must be carefully interpreted as to the relationship between membership and number actually working in the occupation. Failing help from any of these or other sources, the only method remaining to obtain an estimate of employment in the occupation is to see that a representative sample of employers is included in the employer inquiries and to base an estimate upon the sample expansion of their replies.

It is an advantage to the Guide project, in fact, to complete the checking of all available, published material, statistical and otherwise, on the selected occupation in advance of the employer inquiries. When the former material is inspected, it may seem that this information merely provides a hypothesis or an approximation in need of much subsequent checking, or it may be judged sufficiently sound that further field investigation of the subject covered does not appear warranted.

To be particularly sought at this early stage in the Guide study is information on age and other characteristics of workers in the occupation, turnover rates, licensing and other requirements, union contracts, job descriptions (compiled possibly by the employment service),output of educational and training institutions, and recent or anticipated technological changes affecting the occupation.

With this background of information, the next step in the Guide study should be the framing of detailed and, if necessary, lengthy schedules covering the topics which the Guide will include. These schedules will guide the interviewer's questions during the employer inquiry and provide a means of recording the information obtained. The study done prior to the interviewing process will show itself to have several virtues at this point. It will make for better informed interviewers, and these need much background (particularly in the more difficult occupations) to gain the maximum advantage from the respondent's knowledge. Preliminary fact finding permits questions to be asked that will establish differences in local practice from the "norm" if one exists, or from the opinions of experts who may be too far removed from recent or practical experience. Also, prior checking of available data makes for uniformity of questioning on prearranged subjects without choking off the collection of additional information which may be volunteered.

The Guide must be written once the necessary information has been collected from bibliographical sources, employer inquiries, and questions of individuals. The latter may include the workers themselves, educators, officers of worker organizations, and various authorities on processes in the industries where the occupation is prominent. Although the Guide's format will be dictated by the standards and customs of the agency issuing it, the document should be as attractive as resources permit. Its style should be keyed to its expected audience.

A final resource that should be drawn upon before the Guide is published is the assistance of outstanding authorities on the selected occupation. Preferably more than one authority should be called on for each Guide in order to reflect some variety of viewpoints and types of competence. These persons should be asked to review the document in draft form and to comment upon its shortcomings, either of commission or of omission. Occasionally, they will find major errors or misinterpretations of the actual situation. More often, the contribution of the reviewers will be to find that one unhappy choice of word or the single garbled phrase that can so easily be perpetrated by the lay person describing a technical specialty. Though not of real importance, such a slip tends to downgrade the entire production in the eyes of those experts who will inevitably discover it.

Nor should those conducting a developing country's program of occupational labor market information hesitate to call for assistance from the most renowned authorities on any subject falling within their fields of competence. Their experience and knowledge, like that of all the others approached for help with the Guides, will be a readily given resource for this program because they, too, have a stake in the future of their nation and its development -- a future that will be very largely made by its youth.

Initiating An Occupational Guide Program in a Developing Country

Development of Occupational Guides immediately following the completion of an Area Manpower Survey would greatly add to the success of the program. An Area Manpower Survey provides the developing country with an excellent point of reference for the subsequent production of counseling and guidance materials. It provides statistics on the current employment of selected occupations, its distribution by industry and, possibly, considerable data as to turnover and characteristics of workers. Occupations singled out for individual treatment in a Manpower Survey because of their assumed importance and verified as to importance by the survey will, in all likelihood, be those featured in a Guide program.

The developing country with stated economic plan objectives and these objectives translated into manpower terms can be on firmer ground as to future employment opportunities by occupation than can localities in the United States for example. There, the hazards both of forecasting employment in an unmanaged economy and of estimating the effects of interstate migration can occasionally lead to substantial errors in longer-range occupational projections. As the developing country would likely plan its Guides around the very jobs most closely tied to the accomplishment of economic plan goals, this greater insight as to future developments in the occupational labor market can yield a considerable advantage to producing sound vocational materials.

Collection and Processing of Guide Data

Because no two occupations are alike in all particulars and all differ radically from most others in some details -- as in job content, working conditions, the way of life associated with the job, or the job's traditions in the past or prospects for the future -- no uniform approach can be suggested for studying all occupations. There must always be, however, an extensive "prestudy" to collect information in advance of the questionnaire. Only with this advance study of the occupation will it be possible to frame inquiries about actual local practices so as to collect the data needed to produce an authoritative result. The questionnaire will obtain information on : the definition and duties of the job; wages, working conditions and lines of advancement for the job; requirements as to personal traits and training for entry into the occupation; and employment trends and future prospects for this type of work.

Once the data have been gathered from the respondents, procedures for processing them will be more or less uniform. A few suggestions concerning these procedures follow.

The time and the cost of collecting Guide information can be justified only if it is used. Consequently, all responses must be carefully reviewed and evaluated so that each recorded item of data, whether quantitative or qualitative, may carry its proper weight in the final characterization. In matters capable of statistical treatment, this may mean a weighted sample or the computation of an average rate. In qualitative matters, this effort to give a representative picture for the area may require the inspection and evaluation of reported opinions so that a given view may be characterized accurately and then cited as a majority or a minority opinion on a particular matter. Or the more literary approach of selecting an especially expressive quotation from the respondent who has best characterized the obviously prevailing sentiment on some specific subject may be used.

When all of the information collected from the employer respondents and other appropriate individuals has been summarized in statistical form or, if not quantitative, organized in logical sequence, the Guide must be written. As stated above, the preliminary draft should be reviewed by outstanding authorities in the field and corrected or modified as appears justified. The document is then ready for publication in the most attractive form possible that will induce the public to use it, whether adults, or youth.

The success of the production, thereafter, will depend upon its initial accuracy and excellence, the extent to which it can be circulated to the audience that will find the information helpful, and the faithfulness with which the information in the first edition of the Guide is reviewed and revised. Because of the rapid social and technological changes that characterize today's world, a standard procedure for reviewing all outstanding counseling and guidance materials at two year intervals is a good working rule.

To illustrate the statements made above to the effect that a substantial amount of "prestudy" must go before framing the questionnaire given employers and other respondents if data are to be collected that will produce a really authoritative Guide, a questionnaire follows which relects such preliminary research. This schedule, on the job of the Statistician, was actually used by representatives of local employment exchanges in one area of the United States to gather information on that occupation.

It must be emphasized that this questionnaire is not attached because it is thought appropriate, as it stands, for use in any other area than the one it was originally designed to serve. The differences between occupations as they are found in different places at different times are such that all inquiry material of this type should be framed against the background of the particular area where it is to be used. However, this schedule does illustrate the type of questions that were believed (after considerable preliminary research) needed to be resolved by the respondents in order to characterize this occupation as it exists in one specific area of the United States. A copy of instructions which were given to the interviewer for use in the survey is also included.

A sample occupational guide prepared in the United States is also included.

Instructions for Interviewer

TYPES OF STATISTICIANS: Statisticians can be divided into two broad groups: mathematical and applied. Mathematical statisticians develop and test experimental designs, sampling and analytical techniques and work out methodological procedures for applying statistical theory; they may also apply established techniques in studies requiring extensive use of mathematical techniques. Applied statisticians, on the other hand, use statistical methods in making studies in specific fields, where, in most cases, knowledge of the subject matter is as important as knowledge of statistics. Workers in applied statistics frequently have job titles indicating their basic speciality and their duties in the statistical sphere as, for example, "health-statistician," "engineer-statistician" and "bio-statistician." Generally, the mathematical statistician may easily transfer from one field of statistical work to another while the applied statistician usually remains in his own subject matter field or a closely related field of study. Occasionally, at the highest levels, an individual may be both a mathematical statistician and an applied statistician.

The word "statistician" is much abused in job specifications and in company titles. Part of this abuse arises from the very nature of the field of statistics since it is a branch of mathematics and also a "tool subject" as are reading and writing. As a tool it is used by a wide range of professional workers in engineering, business, and the social and physical sciences. For example, the sales executive may apply statistical methods to estimate his future sales volume; the psychologist, to evaluate the results of personality tests; the agricultural scientist, to gain insights into the resistance of new plant strains to disease and weather. These workers may use very sophisticated techniques, and in many cases the dividing line between them and the professional statistician is rather vague. The occupational picture is further obscured by the fact that clerical workers making routine mathematical computations, graphs, charts and other statistical devices are sometimes called statisticians.

SELECTION OF RESPONDENTS: As an aid in the selection of respondents for this Guide, we suggest that the local office limit its interviews to persons who can be considered specialists in the use and application of statistical methods to a variety of problems and who spend fifty percent or more of their time in the solving of statistical problems. This definition includes both mathematical statisticians and persons who apply advanced statistical methods to a limited area of knowledge, as for example, public health, market research, biology, etc. The definition excludes, however, those persons who require in their work a knowledge only of elementary statistics. (Elementary statistics in this case is defined as a beginning college course in statistics or four semester hours or less). Before you conduct any interviews you may find it useful to read the Dictionary of Occupational Titles definition of statisticians.

The enclosed questionnaires are designed to guide your interview. You should interview only working statisticians or supervisors of statistical sections, because it is their first hand knowledge of the occupation that is of the greatest value to our program. In addition to visiting statisticians in industry and government, local offices with universities and colleges in their areas should arrange interviews with faculty members teaching statistics. In interviewing faculty members, it will no doubt be necessary to tailor the questionnaire to suit the circumstances, thereby omitting questions that are not applicable.

In order to assist local offices in finding respondents, we are attaching a list of firms as suggestions as likely employers of statisticians. Please feel free to substitute or add firms to this list. Statisticians are to be found in most industries and government agencies; however, they are chiefly employed in headquarters offices and in the larger plants. Significant numbers may be located in various research and development organizations also.

We are enclosing a sufficient number of forms so that the local office may retain a copy of each interview, if it wishes. Because of the length of the form, this information should be obtained through a personal interview with the employer after phoning him in advance to explain the Guide program and to request an interview. Under no circumstances should the questionnaire be mailed to the employer nor should the employer be requested to fill out and mail it to the local office.

The following questionnaire was developed for use in a survey conducted in a labor market area in the U.S. It illustrates the kinds of information needed for the preparation of an occupational guide for statistician occupations.

EMPLOYER QUESTIONNAIRE

Statistician, 0-36.51, 0-35.75

Name of Establishment: ____________ Address: ____________

Name of person interviewed: ____________ Position: ____________

What are the principal products or activities of this organization? ____________

____

EMPLOYMENT STATISTICS

1. Total number of persons employed, all occupations: ____________

2. Number of professional statisticians employed with the following academic training:

   No degree ______ Bachelor's degree ______ Master's degree ______
   Doctor's degree ______ Total: ______

3. Number of women employed as professional statisticians in this firm: ______

JOB TITLE

Please give the job titles this firm uses to classify persons engaged in statistical work. (Professional jobs only, omit statistical typists, clerks, etc.)

JOB DUTIES

1. Please describe the duties of a statistician in this organization. (We would like a summary of his duties that would indicate the scope of his job. It may be helpful to ask your respondent to describe his activities during a typical day.)

2. What are some of the common or "typical" problems that a statistician in this firm may be required to solve? (It may be helpful to ask the respondent to think back over his work in the past few days to assist him in recalling recent problems that have confronted him.)

3. What does he consider to be his most difficult and demanding tasks? Please describe them in as much detail as possible.

4. What does he consider to be his most responsible tasks?

5. In order to do creditable work as a statistician with this organization, is it necessary for the statistician to have extensive training in a non-statistical speciality such as engineering, psychology, biology, economics, etc.? If so, in what non-statistical subjects does this firm expect its statisticians to be competent and why?

6. Does this firm employ outside consultants for particularly difficult statistical studies? If so, under what circumstances?

WORKING CONDITIONS

1. Does the statistician consider his work to be physically or mentally strenuous? Please discuss the reasons for such stress or lack of stress.

2. What physical handicaps would seriously limit employment in this job?

3. a. How much of the respondent's working time is spent outside his office and how does he spend it? (meetings with management officials, consulting with other departments, etc.)

   b. To what extent is travel part of the job?

4. What does the respondent consider to be the (a) advantages and (b) disadvantages of his occupation?

   a. Advantages -

   b. Disadvantages -

5. To what professional organizations do statisticians employed in this firm belong?

6. Is the respondent responsible for conducting in-plant courses in statistical methods? If so, please determine how many hours a week he spends on this task, the level of statistics taught, and the number of students taught.

7. Does the respondent conduct courses in statistics in university extension or night schools? If so, what courses does he teach and how many hours a week does he devote to this task?

EMPLOYMENT OUTLOOK

1. (a) Has this organization recruited any statisticians in the past three years? ________________

   (b) If so, what has been its experience? For example, has it been necessary to recruit nationally to obtain competent workers or has it found plenty of qualified workers locally?

   (c) To what reasons does the respondent attribute his organization's ease or difficulty in recruiting persons in this occupation?

3

2. Has this firm found that statisticians in certain specialities or at certain degree levels have been in particularly short supply while others have been in abundance? Please give details.

3. Outside of this organization's own experience, does the respondent have any knowledge of the supply/demand situation for statisticians (a) in this area and (b) nationally?

   (a) This area -

   (b) Nationally -

4. Does this organization have any unfilled openings for statisticians at this time? ______ If so, at what degree levels: Bachelor _______ Master _______ Doctor _______. Does this firm anticipate any difficulty in filling these jobs? Please explain.

5. (a) What does the respondent think in general of the future job opportunities in this occupation? For example, does he think there will be substantial growth in the number of jobs for statisticians? Give details.

   (b) What factors does he think will be most influential in the growth or decline in the number of statisticians employed in this area? Please give details.

6. Please ask your respondent to comment on the influence of any technological changes of which he is aware that will have an impact on this field of work. He should be asked, especially concerning the use of electronic data processing equipment and its effect on the future duties and responsibilities of statisticians, their employment prospects, and the skill and educational requirements of the occupation:

   (a) Duties of statisticians -

   (b) Responsibilities of statistician -

(c) Employment prospects of statisticians -

(d) Skills of statisticians -

(e) Education of statisticians -

SALARIES AND HOURS

In asking for salary information, you may find it helpful to assure your respondent that individual firm information is never published or revealed to unauthorized users.

1. Please determine the salary this firm would offer a statistician with the following qualification, if it were now hiring. If the employer does not hire at some of these levels, please indicate.

Degree	Starting Salary per Month		Maximum salary that a statistician would be paid in this organization
	No Experience	5 Years' Experience	
Bachelor			
Master			
Doctor			

Comments on salary data:

2. In addition to the above, do the statisticians in this firm participate in any profit sharing plan or bonus plan that adds substantially to their income?

3. Are the statisticians employed by this organization engaged in outside activities such as teaching or consulting in which they can earn additional income? If possible, give some indication of the amount that can be earned from these activities or some idea of whether or not the amount is negligible or considerable.

4. What fringe benefits do the statisticians of this firm receive? Please indicate the amount of vacation, insurance, (both health and/or life), and other types of fringe benefits, such as payment of educational expenses, provided.

5. What is the usual length of the workweek? ________ Is overtime ever required __________ If so, under what circumstances is overtime worked?

ENTRANCE REQUIREMENTS

1. How would this firm go about filling a vacancy for a statistician?

   (a) Would it be likely to promote from within? If so, under what circumstances?

   (b) If it were to hire from the outside, what channels would it use?

2. Please list this firm's basic minimum requirements for hiring a statistician:

   (a) Education:

   (b) Age: Lower limit ________ Upper limit ________

   (c) Experience:

3. What desirable personal characteristics does this firm look for when hiring a statistician?

4. Please ask your respondent to characterize the opportunities for women in the field of statistics. Does he feel that this is a good field for women? Why or why not?

5. How did the respondent find:

    (a) His entry level job?

    (b) His present job?

    (c) Does he consider his experience in this respect unusual? If so, why?

PROMOTION

1. What would the respondent consider to be advancement for himself - - a salary increase, more responsibility for finished projects, a similar job in a larger company, etc. ?

2. Is the statistician, who is usually in an advisory position, ever promoted to an executive position? In other works, can the statistician in this firm move from a staff position to a line position?

3. (a) What does the respondent think of employment opportunities for becoming a consultant in this area?

    (b) What does he believe to be the advantages or disadvantages of consulting work?

4. To whom, in this firm, is the statistician responsible?

TRAINING REQUIREMENTS

1. What, in the opinion of the respondent, is the "ideal" preparation, as regards the following topics, for a person who wishes to become a professional statistician:

    (a) Undergraduate major:

    (b) Undergraduate minor:

(c) Amount of statistics at the undergraduate level:

(d) Amount of mathematics at the undergraduate level:

(e) Graduate degree (s):

(f) Major fields of interest at the graduate level:

(g) Types and amount of experience required to become "fully qualified" in this occupation:

2. What specific statistical and mathematical courses should the student have taken at the undergraduate level?

3. In the opinion of the respondent, what are the best universities in this State and in the Nation for training in statistics?

4. How valuable is the B.S. degree in statistics in the statistical work of this firm? The M.S.? The Ph.D.? How valuable is the man with a degree in another field with some statistical training?

   (a) B.S. degree in statistics -

   (b) M.S. degree in statistics -

   (c) Ph.D. degree in statistics -

   (d) Degree in another field -

5. Are there any high school courses that the respondent would specifically recommend?

6. Does this organization have a training program, either formal or informal, for inexperienced statisticians? If so, please give details.

ADDITIONAL INFORMATION

If your respondent has any other comments on topics not covered in the questionnaire or if he wishes to elaborate upon any statement which he feels warrants further attention, please note them below.

OCCUPATIONAL GUIDE

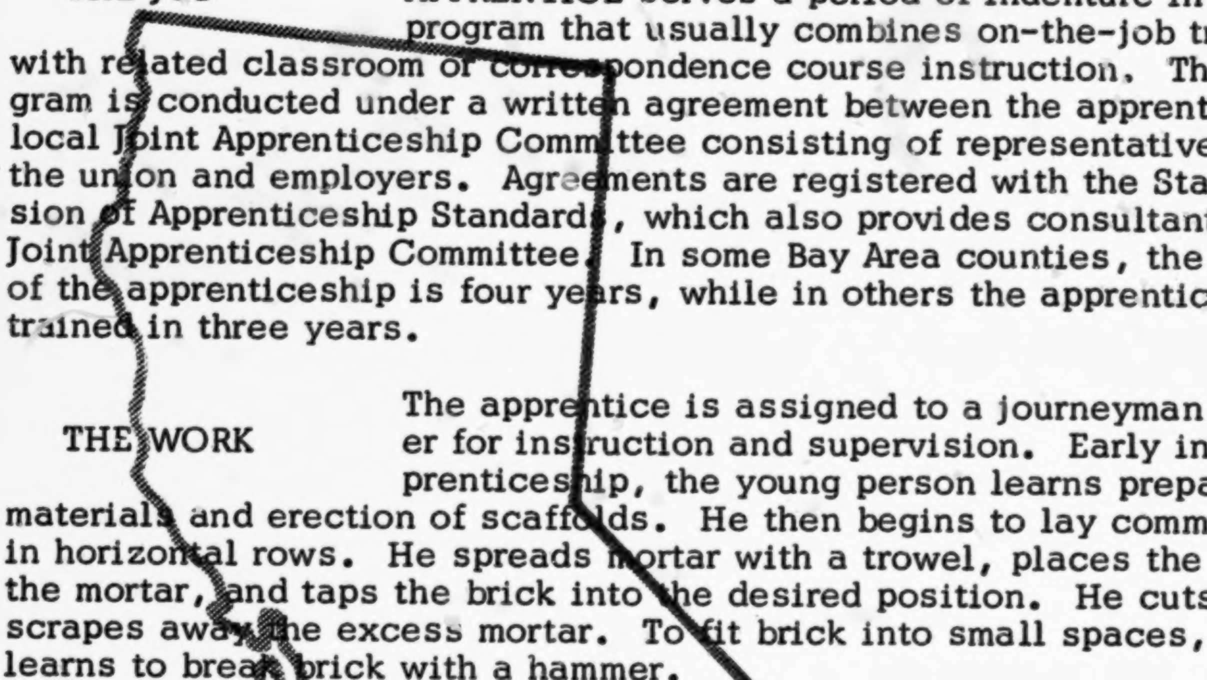
STATE OF CALIFORNIA
Edmund G. Brown
Governor

DEPARTMENT
OF
EMPLOYMENT
Irving H. Perluss
Director

BRICKLAYER APPRENTICE

number 204
Prepared: June 1959
Revised: Jan 1962

SAN FRANCISCO BAY AREA



THE JOB

To become a skilled craftsman, the BRICKLAYER APPRENTICE serves a period of indenture in a formal program that usually combines on-the-job training with related classroom or correspondence course instruction. This program is conducted under a written agreement between the apprentice and a local Joint Apprenticeship Committee consisting of representatives from the union and employers. Agreements are registered with the State Division of Apprenticeship Standards, which also provides consultants to the Joint Apprenticeship Committee. In some Bay Area counties, the length of the apprenticeship is four years, while in others the apprentice is trained in three years.

THE WORK

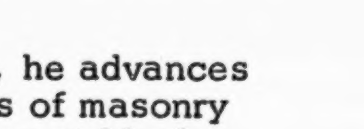
The apprentice is assigned to a journeyman bricklayer for instruction and supervision. Early in his apprenticeship, the young person learns preparation of materials and erection of scaffolds. He then begins to lay common brick in horizontal rows. He spreads mortar with a trowel, places the brick in the mortar, and taps the brick into the desired position. He cuts or scrapes away the excess mortar. To fit brick into small spaces, he learns to break brick with a hammer.

When he develops skill in the fundamentals of bricklaying, he advances to more complicated work and to the use of additional types of masonry materials such as terra cotta, tile, firebrick, glass and cement blocks, and stone. Sometimes with the use of blueprints, he lays bricks or other masonry materials in various designs or shapes. He uses his skill in constructing walls, corners, angles, piers, chimneys, fireplaces, and arches. He learns to check the alignment of his work, a procedure that enables the bricklayer to produce finished masonry that reflects the care and competence of a skilled craftsman.

WORKING CONDITIONS

Although power tools are being used more frequently, bricklaying is primarily a hand tool trade. The apprentice initially will need some basic tools, such as a trowel, brick hammer, plumb bob, and jointer. In time he will acquire additional tools such as squares, gage line, level, chisels, and templates for arches.

Bay Area bricklayers belong to locals of the Bricklayers and Masons Union. The newly indentured apprentice generally pays one-half the union initiation fee at or near the beginning of his apprenticeship, an outlay amounting to $35.



Bricklaying is considered a relatively hazardous occupation. Falls from a scaffold or ladder, injuries from falling objects, skin burns from lime, infected fingers from

File under BRICKLAYER APPRENTICE, 7-97.410

abrasive action of brick and tile, in addition to the usual mishaps possible on construction sites are among the dangers the bricklayer faces. To protect the worker from such hazards, various safety measures and equipment have been devised including scaffold guards and proper protective clothing. Also, apprentices are thoroughly instructed in safe practices.

Much of the work of the bricklayer is performed out-of-doors. However, some jobs, notably construction of fireplaces, are done in semi-completed and completed buildings. The worker must be capable of working on scaffolding or in cramped quarters. Although he seldom works in the rain, he will encounter many different kinds of weather conditions. Stooping, lifting, bending and standing are required to perform his tasks. Good eyesight, the ability to use his hands with speed, and a sense of balance are essential to the bricklayer.

Bricklayers are usually employed by masonry contractors. Large general contractors employ a few, and some of these craftsmen work regularly or periodically for waterproofing and caulking contractors and for firms specializing in window casing installations.

Although refractory bricklayers and stone masons are not considered members of the construction bricklayer's occupation, some persons in the Bay Area work interchangeably in these jobs, depending on seasonality and need.

EMPLOYMENT OUTLOOK

About 65 bricklayer apprentices were working in the six Bay Area counties near the end of 1961. According to employers and union officials, there are more qualified young men who desire to enter this trade than there are apprenticeship openings available, a circumstance that makes for stiff competition for the openings that exist. One reason for limited apprenticeship opportunities in this trade is that small contractors are often unable to provide year-round work in sufficient quantity to keep apprentices regularly employed. Also, some feel that the apprenticeship program is too costly in terms of the journeyman's time required for training the apprentice, particularly in the early stages of training.

Although population growth and industrial development in the Bay Area have increased the potential demand for bricklaying, the occupation has not grown in recent years Little or no growth is expected in the near future, and some local authorities predict an actual decline in employment of bricklayers. The basic reason is that methods, materials, and tools are continually improving, thus permitting each bricklayer to accomplish more work than was possible in the past. For example, fork lifts are now used to carry bricks to the workers, and hoses and high pressure systems quickly handle large quantities of grout. Improvements such as these result in quicker, more economical construction than was possible when all materials had to be carried manually and handled in small quantities.

Aside from population expansion, one additional factor may soften the effect of work-saving methods. As labor requirements are cut, the price of brickwork may decline relative to other kinds of construction. Brickwork and other masonry, in this case, might well enjoy increased popularity. Additional possibilities must be considered, however, including changing tastes in the design of buildings and competition from building materials of the future that may combine new standards of attractiveness, durability, and low cost.

THE PAY AND HOURS

Variations in pay rates within the Bay Area reflect union contracts negotiated by separate locals of the union. In San Francisco, San Mateo, Marin and Solano counties, apprentice bricklayers currently start at 45 percent of the journeyman's rate of $4.65 an hour. Fringe benefits amount to an additional 42 1/2¢ per hour.

The apprentice receives a percentage increase in pay each six months of the four-year apprenticeship until he reaches 95 percent of the journeyman's pay during the last six months of his training. The workweek is 35 hours. Time-and-one-half is paid for overtime.

In Alameda and Contra Costa counties, the journeyman's rate is currently $4.33 per hour plus 37¢ for fringe benefits. The apprentice begins at 35 percent of this rate. He receives percentage increases each six months of the three-year apprenticeship up to 90 percent of the journeyman's rate during the last six months. The workweek is 40 hours with double time for overtime.

ENTRANCE REQUIREMENTS

High school graduation is not always required in this trade, but it is definitely advantageous to the applicant. Persistence on the part of the would-be apprentice in seeking this work, good grades in school or other evidence of willingness to learn, knowledge of the job combined with demonstration of intent to stay with the trade, and good recommendations from teachers or former employers are all viewed with favor. The age range usually acceptable is either 17 to 21 or 17 to 25. If an applicant has been in military service, however, the upper limit may be raised somewhat.

In seeking a bricklayer apprenticeship, the young person should contact the union office in San Francisco or Oakland. The union will refer him to the Joint Apprenticeship Committee and provide him with instructions on how to present himself to this group. Generally, the individual either appears at a formal meeting of the committee or sends a letter of application. Careful preparation for this event is important, for if the person's application is not approved, his name will not be placed on the apprenticeship waiting list.

Because of the keen competition for bricklayer apprenticeships, the young applicant is more likely to find a job if he does not limit himself to the formal application procedure. Direct job solicitation sometimes results in being hired subject to apprenticeship committee approval, and at other times results in an employer recommendation to the committee. Such recommendations, along with sponsorship by friends or relatives who are journeyman bricklayers, have proved helpful in obtaining Joint Apprenticeship Committee approval.

PROMOTION

When the apprentice successfully completes his training, he becomes a journeyman bricklayer. Later he may work his way up to foreman, superintendent, or estimator. Some bricklayers with the necessary financial resources and knowledge of business methods become licensed contractors.

TRAINING REQUIREMENTS

In addition to on-the-job training, most bricklayer apprentices attend 144 hours of related and supplemental classroom instruction each year. In localities where such classes are not offered by a school district, the Joint Apprenticeship Committee and the employers try to arrange to provide such instruction by other means.

High school courses helpful to the future bricklayer include mathematics, mechanical drawing, blueprint reading, and shop.

PART IV

CONTINUING PROGRAM OF MANPOWER REPORTS

A completed Area Manpower Survey provides a comprehensive manpower picture of the surveyed labor market - its unique deployment of manpower. It highlights the current imbalances in labor supply and demand and the future problems to be overcome if stated objectives are to be reached. However, no matter how comprehensive the picture, it is static, covering the present manpower situation and reflecting current thinking of its future direction and dimension. It provides no guidelines to be followed as the developing economy changes the manpower supply - demand relationship nor does it provide the means for measuring the success or failure of programs undertaken to overcome the imbalances in the manpower situation.

Continuing review of changing relationships in labor supply and demand are essential to determine the impact of changes in the trends of business, defective phasing of the various elements in the economic plan for industrial growth and other factors which may delay or prevent the accomplishment of planned development. Maladjustments and malfunctionings must be detected and corrected as they develop, for even short term disruptions in planned economic development can jeopardize the fulfillment of long term objectives. A continuing program of manpower reporting provides the means whereby economic and manpower planners both in private enterprise and in government can be informed currently of the impact on the manpower development program of the variations in economic conditions or other factors affecting orderly development of needed manpower.

The development of human resources particularly in the industrializing nations is of such magnitude that the problem cannot be resolved by private enterprise or by government alone. It must be a coordinated effort of government and private enterprise if manpower is to be developed in the right numbers, at the right time and with appropriate skills. A continuing flow of information is necessary to inform these partners of the progress being made and of any defeciencies that develop.

Techniques For Determining Manpower Skill Needs and Training Requirements

The introduction of a continuing program of manpower reports in a country should not be delayed because of the limitations of statistical institutions known to exist in the country. If one were to wait for the limitations to be removed, much valuable time would be lost in the implementation of the economic development plan. Once a reporting program is introduced, most of its deficiences will be overcome through time as improvements are made in its operation. The lack of manpower information, which otherwise might have indicated weaknesses which could have been readily overcome if the facts were known in time, is an unjustifiable reason for delay or failure of a vital aspect of the development plan.

DATA NEEDED

The extent of detail in the information obtained in a continuing reporting program is dependent upon conditions within the country. The rapidity of industrial development and the complexity of the staffing patterns in expanding plants, in terms of numbers of occupations and training time required to develop the necessary skills, will dictate the program scope.

A continuing program of manpower reports should include information on the following:

- Employment
  - Current
  - Past
  - Future
- Current Job Openings
- Labor Turnover
- Total Accessions
  - New Hires
- Total Separations
  - Quits
  - Layoffs
- Unemployment

Occupational detail of current employment, future demand and current job openings would be helpful particularly in determining the direction training programs should take to meet the changing demands of the economy.

Employment: Current employment is the most important single item of information to be collected in a continuing reporting system. Fluctuations in employment shown in successive reports will show the improvement or deterioration in the manpower situation. If deterioration is indicated, investigation should be made to determine the cause and corrective action should be instituted as soon as possible to eliminate it.

If the information is collected by occupation, significant fluctuations should be called to the attention of the training and educational authorities to determine if changes are called for in the types of training given.

Past period employment should also be collected in the current period from all reporters to provide trend data. This is necessary to make the data currently reported usable particularly for those employers who did not submit a report for the preceding period.

Future employment is an indication of the employers' expectation of what his employment will be at the future date if his plans for that time materialize. Short-run estimates of future employment are needed since the continuous reporting program is designed to describe the current situation and its relationship to the immediate past and immediate future. The period will usually be the same as the interval between reports. For example, if reports are collected each three months, the report might call for employment three months ago and three months hence. Other periods might be selected depending upon the specific problems of the area.

Current Job Openings: Information on current job openings is direct evidence of immediate deficiencies in manpower utilization. The deficiency may be temporary in nature, resulting from delay in active recruitment of available qualified workers in the local labor supply. It may be, however, that the deficiency is an indication of an inadequate supply of workers with appropriate qualifications pointing to the need for increased output by the educational system of workers trained in the appropriate occupations.

Labor Turnover: At the outset, labor turnover information may be limited to the reporting of total accessions and total separations. Later this might be expanded to include under separations, the number of workers laid off and the number who quit, and under accessions, the number of those hired who had never before been employed by the employer. In some industries a count by sex is important.

Labor turnover information provides information on the internal workers of the labor market that are not otherwise reflected in the gross counts of employment. For example, a given establishment may report an employment of 100 workers in one report and in the next report 110 workers, an increase of ten between reporting periods. In the interim between reports, the establishment may have lost fifteen workers due to death, withdrawal from the work force, quits or layoff. Thus 35 workers had to be recruited to reach the new level of 110 workers. These internal movements within the labor market can be of vital importance to the manpower development and utilization program.

Special Questions: Additional questions may be included on the inquiry form from time-to-time to obtain one-time information on particular aspects of the manpower program or of the economy. These questions may cover such topics as: recruitment problems; scarce skills; obstacles to planned expansion; surplus workers; training problems and educational requirements.

When a continuing reporting program is first introduced, it may be that occasional inquiry on the hours of work and on earnings may be adequate. But as the economy progresses, information on hours of work and earnings may need to be collected with the same frequency as employment. This information is helpful in assessing underemployment in the industrial sector, excessive work hours in some activities or the adequacy of wage payments in meeting the needs of the workers.

Unemployment: Current data on the number of persons unemployed and underemployed are perhaps the most difficult to obtain in developing countries. This monograph will not cover methods for obtaining this information. Reliance must be placed on information obtained in the most recent Census of the total population with projections to the current period using interim sample household survey results if such surveys have been instituted. In the absence of such surveys projections may be based on the Census adjusted for information obtained from informed persons, training institutions and governmental sources.

In the early stages of economic development, the precise count of total unemployment is not as significant as knowledge of the number among the unemployed who have skills currently needed by productive plant. This will be at best a very small proportion of the total unemployed. The remainder of the unemployed constitutes a supply of persons available for training in appropriate skills.

COVERAGE

Geographic: As with the Area Manpower Survey, the continuing Program of Manpower Reports may cover a single labor market or it may cover the entire country. The circumstances which dictated the geographic coverage of the Area Manpower Survey (see Chapter V, Part II) will also apply to the continuing program.

Establishments: If an Area Manpower Survey preceded the introduction of the continuous reporting program, the list of employers developed for that survey may be adapted for the continuing program. Where resources will not permit processing of the full list on a recurring cycle, consideration might be given to the utilization of all firms above a certain size and elimination of all smaller firms. The size selected for the employment size above which all establishments are asked to report will probably vary from industry to industry and to a considerable extent will be dictated by the training time required for the occupations in the industry. An industry characterized by occupations which require little, if any, advance training should have a higher employment cut-off than another industry in which the occupations of most of the workers require intensive pre-employment training of some duration. Industries significant to the economy should have between 40 percent and 60 percent of their employment represented in the establishments selected for the continuing reporting program.

FREQUENCY

The interval between reports will be conditioned to an extent by the rapidity of change in the economy and particularly in the labor market. The optimum period may have to be extended because of the limitation in resources available for processing the completed reports and analyzing the data. An interval of six months will be adequate at the start in many situations with a reduction to three months when developments increase in tempo and more current data are needed.

EMPLOYMENT INQUIRY

A suggested Employment Inquiry form follows which should be considered as a base for designing a form appropriate to the conditions in the country or area covered by the program.

Report Number ____________

EMPLOYMENT INQUIRY

____
(Area)

____
(Report Period)

a. Employer Name
Address
Codes: Ind.__________ Geo.__________

b. Kind of business operated ____________

Please Read Instructions Carefully Before Entering Your Information

c.	Employment			Current Job Openings	Labor Turnover		Comments
Item	Month (Six Mos. ago)	Month (Current)	Month (Six Mos. hence)		Workers Hired During the Past Six Months	Workers Separated During the Past Six Months	
1	2	3	4	5	6	7	8
Total							
Women							
Occupation							
A							
B							
C							
D							
E							
Other Occupations							

Instructions

Section (b), Kind of Business: Enter a brief description of the kind of business operated such as "Retail trade-groceries," "Mining-petroleum," "Automobile Repair" etc. If manufacturing describes the process; list the major products produced such as "Petroleum Refinery - gasoline, fuel oils," "Textile Mill - broadwoven cotton goods." "Apparel manufacture - ladies dresses."

Section (c), Columns 2, 3, and 4: Enter the number of workers (total of all workers and the number of these who are women) who were in your employ at the end of the month shown. If you have workers in the occupations shown in Item 1, enter the number of all workers engaged in these occupations at the end of the month shown.

Column 5, enter the number of job openings in your establishment (vacant job stations you would fill now if qualified workers were available). Show the total number of vacancies and the number of these that require women workers.

Column 6, enter the number of workers (total of all workers and the number of these who are women) who were added to your staff during the past six months.

Column 7, enter the number of workers (total of all workers and the number of these who are women) who were separated from your employ in the past six months. Include those who quit, were laid-off, died, retired and entered the armed forces.

Column 8; in this column enter your comments as to the cause or reason for (a) large employment changes over the past six months, (b) large employment changes expected in the coming six months or (c) a large number of job vacancies.

The name of the area, the reporting period, the employer's name, address, industry and area (if more than one geographic segment is included in the program) codes should be entered on the form before it is sent to the employer. A report identification or control number may also be assigned to facilitate processing the completed schedules. The particular occupations for which data are needed should be prelisted on the schedule and a description of those occupations may be included in an accompanying sheet.

Processing Reported Data

The information reported on the inquiry form by the employers must be summarized in meaningful form for analysis. Two worksheets are suggested for this purpose. One (Worksheet 10)organizes the information by occupation within industry to indicate conditions within the different industrial sectors of the economy. The second (Worksheet 11) summarizes the information by industry within major occupations to show the overall situation in the different occupations.

Worksheet 10

Past, Current and Expected Employment; Job Vacancies, Accessions and Separations; Total for Area and by Selected Occupations in Selected Industries

Item	Employment			Current Job Vacancies	Accessions	Separations
	Six Months ago	Current	Six Months hence			
1	2	3	4	5	6	7
1. Area Total						
2. Area Total Women						
Industry I						
3. Industry Total						
4. Women						
5. Total in listed Occupations						
6. Occupation A						
B						
C						
D						
E						
F						
etc.						
Industry II						
3. Industry Total						
4. Women						
5. Total in listed Occupations						
Occupation A						
B						
C						
D						
E						
F						
etc.						
Industry III						

Instructions For Completing Worksheet 10

This worksheet is a summary of all information reported for the area and for each of the industries covered by the continuing reporting program. It also distributes the data by prelisted occupations in the industry.

The completed schedules should be edited carefully for consistency in reporting and for completeness in response. Complete and consistent schedules pose no problem in tabulating data but incomplete schedules must be given special handling in processing. For example: a schedule which omits data for column 2 (past employment) but contains information for column 3 (current employment) and column 4 (expected employment) cannot be used in the measure of past trends in employment but may be used in the computation of future trends. Similarly, unless, current employment is reported in column 3, data for the remaining columns cannot be used except that reported for "Current Job Vacancies." Once the editing is completed, the schedules should be separated between those that can be used for all data, and those that can be used for separate items or groups of items.

Each of the groups of schedules should then be sorted by industry and tallies made for each of the items reported by establishments in the industry. The totals of these tallies should then be entered in the appropriate place on the worksheet. Major industries should be listed in column 1 of the worksheet and data posted for each of these industries. The remaining industries in each major industry division may be combined.

Worksheet 11

Past, Current and Expected Employment, Job Vacancies; Accessions, and Separations; Total for ________ (area) and by Selected Industries in Selected Occupations

Item	Employment			Current Job Vacancies	Accessions	Separations
	Six Months ago	Current	Six Months hence			
1	2	3	4	5	6	7
a. Area Total						
b. Listed Occupations						
c. All Other Workers						
Occupation A						
d. Occupation Total						
e. Industry I						
II						
III						
IV						
V						
VI						
etc.						
Occupation B						
d. Occupation Total						
e. Industry I						
II						
III						
IV						
V						
VI						
etc.						
Occupation C						

Instructions For Completing Worksheet 11

This worksheet summarizes for the area the data reported for each of the prelisted occupations and indicates the industries in which workers in these occupations are employed.

From the industry tallies prepared when the inquiry forms were in industry order obtain the occupational totals for each of the reported items. These industry totals should be posted to the appropriate location (Line E et seq) on Worksheet 11. The sum of the industry totals for the occupations is the total for the occupation (Line D). The sum of the occupation totals should be entered in line B. Line C is the difference between lines A and B.

Report Preparation

The information contained in Worksheets 10 and 11 can be developed into meaningful tables showing the relationship between past and current employment and between the present time and the near term future. The labor turnover information shows the activity which went on in the labor market while the economy moved from the level of six months ago to its present level. A table showing the occupational make-up of the job openings that exist today has a meaning of its own.

Helpful as these tables may be, the data in them can become more meaningful to those who need to know the facts, if a short analytical statement is prepared to accompany the information. The analysis might be organized in the following manner:

> Summary of Developments: A concise statement might describe past and anticipated trends in the reported sector of employment, summarize past and anticipated developments in manpower supply (where adequate factual support exists for such generalizations) and discuss any major manpower problems, current or expected, uncovered in the reporting process.

Employment Trends: This section might contain a more detailed exposition than presented in the summary of past and anticipated developments in the reported sector of employment. These development should be detailed by industry and by occupation and they should be related to economic plan requirements wherever pertinent. Manpower demand information is derived from the expected employment and job vacancies data reported on the employment inquiry form.

Trends in Manpower Supply: This section should detail past and anticipated developments in the supply of workers. Discussion should not center solely around the supply available for jobs in the reported sector of employment (if this sector is a narrow one), but also encompass, if only in narrative terms, trends in the total available labor supply. In the absence of data on manpower supply, it is probable that employer comments on the inquiry form will provide leads for the analytical comment on manpower supply. Training institutions may also provide information pertinent to supply analysis.

Manpower Demand - Supply Relationship: This section should contain a discussion of past and expected developments in the relationship between job openings and the supply of qualified workers. The discussion might well be organized by industry and by occupation, describing in as much detail as possible existing and anticipated manpower shortages and surpluses.

Where it is believed that the manpower demand-supply relationship can be more knowledgeably discussed if the impact of external influences on the labor market can be appraised, additional information can be requested on the employer schedules; or regualr contacts can be instituted with appropriate government officials. Items to be explored might include economic plan developments, housing, training, and wage rates.

> Recommended Actions: Every Periodic Manpower Report should include a section on the action programs needed to meet current problems, if problems of labor force imbalance are shown to exist. If recommendations would not be in order in view of the administrative pattern within which the report is prepared, there should at least be a clear and accurate statement of the problems indicated by the survey so that appropriate action programs can be formulated at other levels.

The channels for transmitting the completed Periodic Manpower Report to higher administrative levels will depend upon circumstances in the country where it is prepared. The same consideration will affect the possibility of issuing various types of public informational releases from this essentially administrative system of reporting.

A.I.D. LABOR-MANPOWER MANUALS

ESTABLISHMENT OF NATIONAL EMPLOYMENT SERVICES IN DEVELOPING COUNTRIES
(Available in English, French and Spanish)

MANPOWER PROGRAMS AND PLANNING IN ECONOMIC DEVELOPMENT
(Available in English and Spanish)

THE FORECASTING OF MANPOWER REQUIREMENTS
(Available in English and French)

DEMOGRAPHIC TECHNIQUES FOR MANPOWER PLANNING IN DEVELOPING COUNTRIES
(Available in English and French)

ROLE OF A LABOR DEPARTMENT IN DEVELOPING COUNTRIES
(Available in English, French and Spanish)

CONDUCTING A LABOR FORCE SURVEY IN DEVELOPING COUNTRIES
(Available in English and French)

COMPUTATION OF COST OF LIVING INDEXES IN DEVELOPING COUNTRIES
(Available in English Only)

MANPOWER IN SOCIAL AND ECONOMIC DEVELOPMENT - PROCEEDINGS OF THE 1964 INTERNATIONAL MANPOWER SEMINAR
(Available in English and French)

MANPOWER IN SOCIAL, ECONOMIC AND TECHNICAL DEVELOPMENT - PROCEEDINGS OF THE 1965 INTERNATIONAL MANPOWER SEMINAR
(Available in English and Spanish)

HOW TO ESTABLISHMENT CURRENT REPORTING OF EMPLOYMENT, HOURS AND EARNINGS IN DEVELOPING COUNTRIES
(Available in English Only)